



SUPPLEMENTARY SERVICE MANUAL

VK10W

FOREWORD

This Supplementary Service Manual has been prepared to introduce new service and new data for the VK10W. For complete information, on service procedures, it is necessary to use this Supplementary Service Manual together with following manual:

RS90K, RS90RK, RSG90K, RS90MK, RST90K, RST90TFK SERVICE MANUAL:

8FJ-28197-10 (981096) (LIT-12618-02-38)

VK10L SUPPLEMENTARY SERVICE MANUAL:

8FN-28197-10 (LIT-12618-02-42)

VK10W

SUPPLEMENTARY SERVICE MANUAL

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Corporation, U.S.A.

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NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha snowmobiles have a basic understanding of the mechanical concepts and procedures inherent in snowmobile repair. Without such knowledge, attempted repairs or service to this model may render it unfit and/or unsafe to use.

This model has been designed and manufactured to perform within certain specifications in regard to performance and emissions. Proper service with the correct tools is necessary to ensure that the vehicle will operate as designed. If there is any question about a service procedure, it is imperative that you contact a Yamaha dealer for any service information changes that apply to this model. This policy is intended to provide the customer with the most satisfaction from his vehicle and to conform to federal environmental quality objectives.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

HOW TO USE THIS MANUAL

Particularly important information is distinguished in this manual by the following notations:



The Safety Alert Symbol means ATTENTION! BE ALERT! YOUR SAFETY IS INVOLVED!



Failure to follow WARNING instructions could result in severe injury or death to the snowmobile operator, a bystander, or a person inspecting or repairing the snowmobile.

CAUTION:

A CAUTION indicates special precautions that must be taken to avoid damage to the snowmobile.

NOTE:

A NOTE provides key information that can make procedures easier or clearer.

MANUAL FORMAT

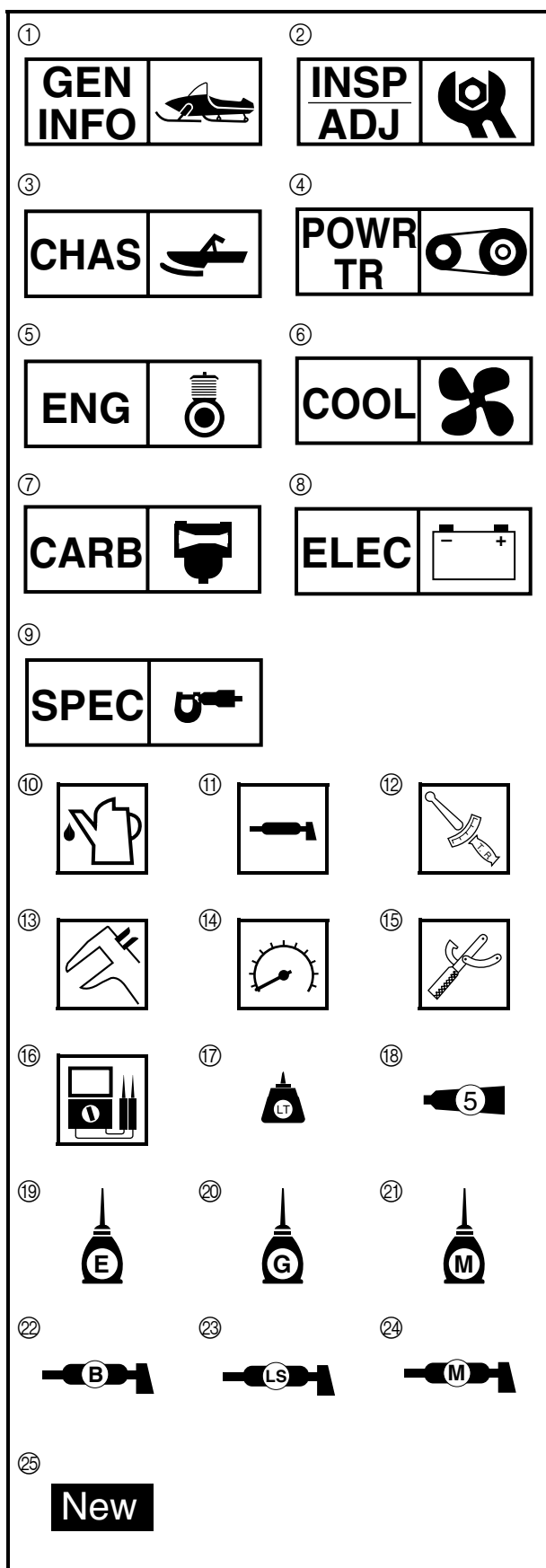
All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all inspection, repair, assembly, and disassembly operations.

In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required to correct the problem will follow the symbol, e.g.,

- Bearings
Pitting/damage → Replace.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section to facilitate correct disassembly and assembly procedures.



ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

- ① General information
- ② Periodic inspection and adjustment
- ③ Chassis
- ④ Power train
- ⑤ Engine
- ⑥ Cooling system
- ⑦ Carburetion
- ⑧ Electrical
- ⑨ Specifications










Illustrated symbols ⑩ to ⑯ are used to identify the specifications which appear.

- ⑩ Filling fluid
- ⑪ Lubricant
- ⑫ Tightening
- ⑬ Wear limit, clearance
- ⑭ Engine speed
- ⑮ Special tool
- ⑯ Ω , V, A

Illustrated symbols ⑰ to ⑳ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑰ Apply locking agent (LOCTITE®)
- ⑱ Apply Yamabond No.5®
- ⑲ Apply engine oil
- ⑳ Apply gear oil
- ㉑ Apply molybdenum disulfide oil
- ㉒ Apply wheel bearing grease
- ㉓ Apply low-temperature lithium-soap base grease
- ㉔ Apply molybdenum disulfide grease
- ㉕ Use new one

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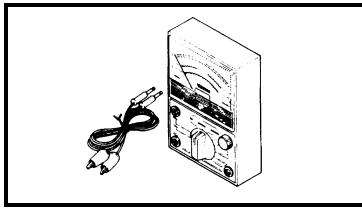
GENERAL INFORMATION

SPECIAL TOOLS

Some special tools are necessary for a completely accurate tune-up and assembly. Using the correct special tool will help prevent damage that can be caused by the use of improper tools or improvised techniques.

NOTE:

- Be sure to use the correct part number when ordering the tool, since the part number may differ according to country.
- For USA and Canada, use part number starting with “YB-”, “YM-”, “YU-” or “YS-”, “ACC-”.
- For others, use part number starting with “90890-”.



FOR ELECTRICAL SERVICE

- Pocket tester
P/N: YU-03112-C
90890-03112

This instrument is necessary for checking the electrical components.

INTRODUCTION/PERIODIC MAINTENANCE CHART FOR THE EMISSION CONTROL SYSTEM



PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable machine operation and a longer service life. In addition, the need for costly overhaul work will be greatly reduced. This information applies to machines already in service as well as new machines that are being prepared for sale. All service technicians should be familiar with this entire chapter.

PERIODIC MAINTENANCE CHART FOR THE EMISSION CONTROL SYSTEM

Item	Remarks	Pre-operation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 4,000 km (2,500 mi) (200 hr)
Spark plugs	Check condition. Adjust gap and clean. Replace if necessary.			●
Valve clearance	Check clearance. Adjust clearance when engine is cold.	Every 40,000 km (25,000 mi)		
Crankcase breather system	Check breather hose for cracks or damage. Replace if necessary.			●
Fuel filter	Check condition. Replace if necessary.			●
Fuel line	Check fuel hose for cracks or damage. Replace if necessary.			●
Idle speed	Check and adjust engine idle speed.		●	●
Carburetors	Adjust synchronization of carburetors.		●	●
	Adjust the jets.	Whenever operating condition (elevation/ temperature) is changed.		
Exhaust system	Check for leakage. Tighten or replace gasket if necessary.			●

GENERAL MAINTENANCE AND LUBRICATION CHART



GENERAL MAINTENANCE AND LUBRICATION CHART

Item	Remarks	Pre-operation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 4,000 km (2,500 mi) (200 hr)
Engine oil	Check oil level.	●		
	Replace.		●	●
Engine oil filter cartridge	Replace.		●	Every 20,000 km (12,000 mi)
Fuel	Check fuel level.	●		
Engine coolant	Check coolant level.	●		
	Air bleed the cooling system if necessary.			●
Louvers	Check condition.	●		
	Remove snow if necessary.			
Throttle lever (carburetor side)	Check throttle lever operation.	●		
Throttle lever (handlebar side)	Check operation.	●		
	Repair if necessary.			
Throttle override system (T.O.R.S.)	Check operation.	●		
	Repair if necessary.			
Engine stop switch	Check operation.	●		
	Repair if necessary.			
Drive guard	Check for cracks, bends or damage.	●		
	Replace if necessary.			
V-belt	Check for wear and damage.	●		
	Replace if necessary.			
Drive track and idler wheels	Check deflection, and for wear and damage.	●		
	Adjust/replace if necessary.			
Slide runners	Check for wear and damage.	●		
	Replace if necessary.			●
Brake and parking brake	Check operation and fluid leakage.	●		
	Adjust free play and/or replace pads if necessary.			●
	Replace brake fluid.	See NOTE on page 4.		
Disc brake installation	Check for slight free play.			Every 1,600 km (1,000 mi)
	Lubricate shaft with specified grease as required.			
Drive chain oil	Check oil level.		●	
	Replace.			●
Drive chain	Check deflection. Adjust if necessary.	Initial at 500 km (300 mi) and every 800 km (500 mi) thereafter.		
Skis and ski runners	Check for wear and damage.	●		
	Replace if necessary.			●
Steering system	Check operation.	●		
	Adjust toe-out if necessary.			●
Strap	Check for damage.	●		
	Replace if necessary.			
Lights	Check operation.	●		
	Replace bulbs if necessary.			
Battery	Check condition.			●
	Charge if necessary.			
Primary and secondary clutches	Check engagement and shift speed. Adjust if necessary.	Whenever operating elevation is changed.		
	Inspect sheaves for wear/damage.			
	Inspect weights/rollers and bushings for wear-for primary.			●
	Inspect ramp shoes/bushings for wear-for secondary. Replace if necessary.			
	Lubricate with specified grease.			●

2

GENERAL MAINTENANCE AND LUBRICATION CHART

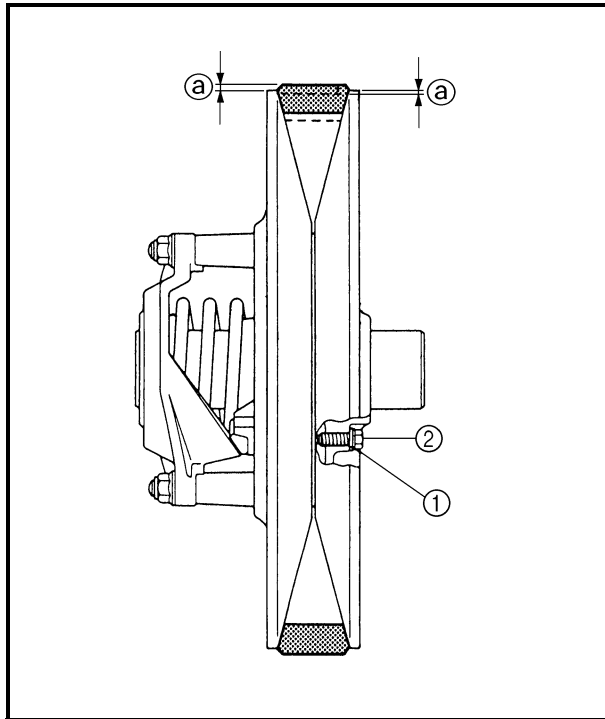


Item	Remarks	Pre-operation check (Daily)	Initial 1 month or 800 km (500 mi) (40 hr)	Every
				Seasonally or 4,000 km (2,500 mi) (200 hr)
Steering column bearing	Lubricate with specified grease.			●
Ski and front suspension	Lubricate with specified grease.			●
Suspension component	Lubricate with specified grease.			●
Parking brake cable end and lever end/throttle cable end	Lubricate with specified grease.			●
	Check cable damage. Replace if necessary.			●
Shroud latches	Make sure that the shroud latches are hooked.	●		
Fittings and fasteners	Check tightness.	●		
	Repair if necessary.			
Tool kit and recommended equipment	Check for proper placement.	●		

NOTE:

Brake system:

- After disassembling the master cylinder or caliper cylinder, always change the brake fluid. Regularly check the brake fluid level and add fluid if necessary.
- Replace the oil seals of the master cylinder and caliper cylinder every two years.
- Replace the brake hose every four years, or if cracked or damaged.



POWER TRAIN

DRIVE V-BELT

⚠ WARNING

When installing the new V-belt, make sure that it is positioned from 1.5 mm (0.06 in) above the edge of the secondary sheave to -0.5 mm (-0.02 in) below the edge ①.

If the V-belt is not positioned correctly, the clutch engagement speed will be changed. The machine may move unexpectedly when the engine is started.

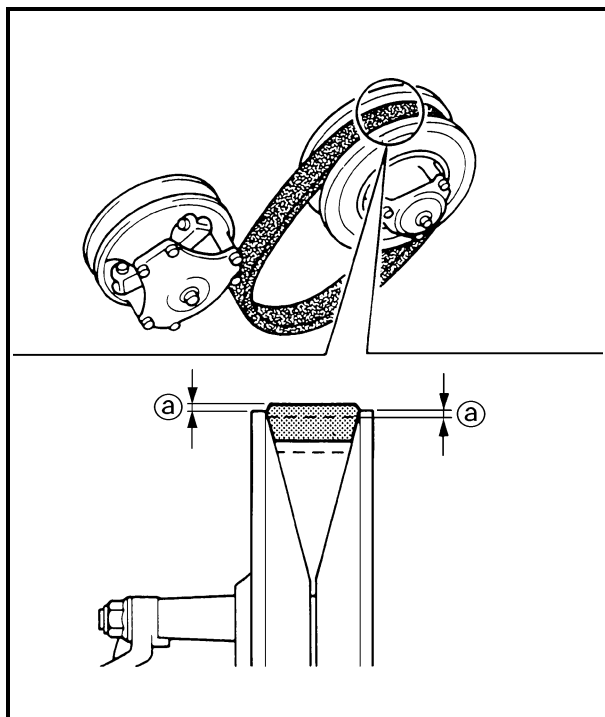
Adjust the V-belt position by removing or adding a spacer ① on each adjusting bolt ②.

CAUTION:

As the V-belt wears, adjustment may be necessary. To ensure proper clutch performance, the V-belt position should be adjusted by adding a spacer on each adjusting bolt when the V-belt position reaches 1.5 mm (0.06 in) below the edge.



New belt width:
34.1 mm (1.34 in)
Belt wear limit width:
32.1 mm (1.26 in)



1. Measure:

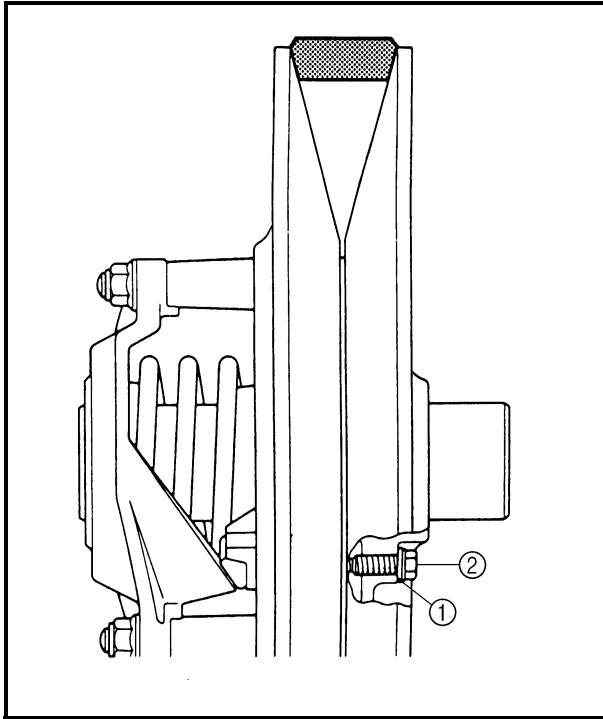
- V-belt position ①

NOTE:

Install the new V-belt onto the secondary sheave only. Do not force the V-belt between the sheaves; the sliding and fixed sheaves must touch each other.



Standard V-belt height:
-0.5 ~ 1.5 mm (-0.02 ~ 0.06 in)




2. Adjust the position of the V-belt by removing or adding a spacer ① on each adjusting bolt ②.

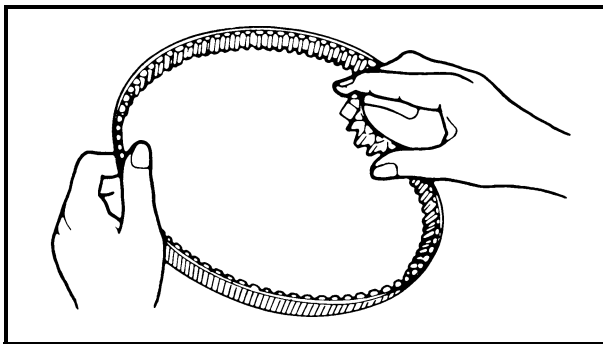
V-belt position	Adjustment
More than 1.5 mm (0.06 in) above the edge	Remove a spacer
From 1.5 mm (0.06 in) above the edge to –0.5 mm (–0.02 in) below the edge	Not necessary (It is correct.)
More than –0.5 mm (–0.02 in) below the edge	Add spacer

Part number	Thickness
90201-061H1	0.5 mm (0.02 in)
90201-06037	1.0 mm (0.04 in)

3. Tighten:

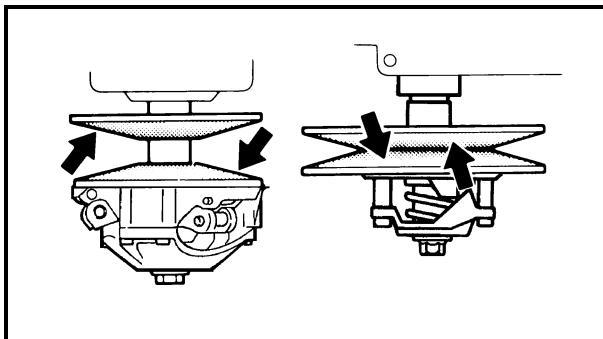
- Adjusting bolt ②

	Adjusting bolt: 10 Nm (1.0 m · kg, 7.2 ft · lb)
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4. Inspect:

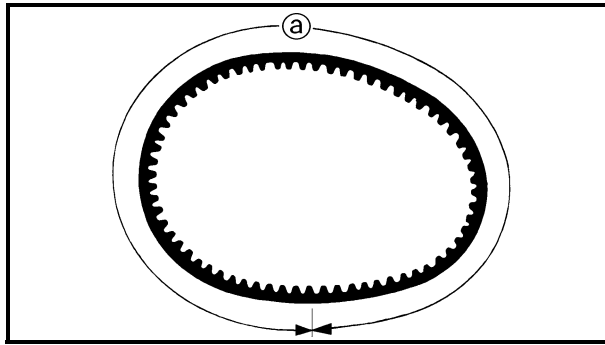
- Drive V-belt
Cracks/damage/wear → Replace.
Oil or grease on the V-belt → Check the primary and secondary sheaves.



5. Inspect:

- Primary sheave
- Secondary sheave
Oil or grease on the primary and secondary sheaves → Use a rag soaked in lacquer thinner or solvent to remove the oil or grease. Check the primary and secondary sheaves.

DRIVE V-BELT/BRAKE PAD INSPECTION/ AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

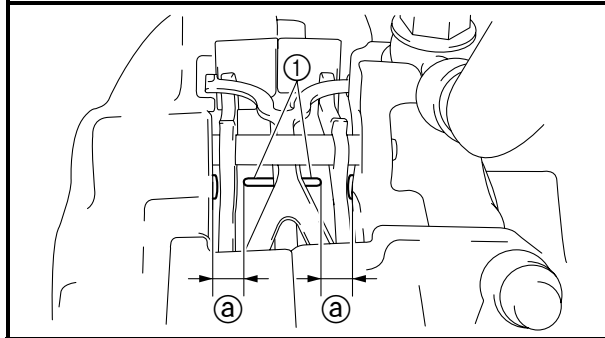


6. Measure:

- Drive V-belt circumference ①
- Out of specification → Replace.



V-belt circumference:
1,132 ~ 1,138 mm (44.6 ~ 44.8 in)



BRAKE PAD INSPECTION

1. Apply the brake lever.
2. Inspect:
 - Brake pad wear ①

Wear indicator ① nearly contacts the brake disc → Replace as a set.



Wear limit:
4.7 mm (0.19 in)

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

⚠ WARNING

Bleed the brake system in the following cases:

- The system has been disassembled.
- A brake hose is loosened or removed.
- The brake fluid has been very low.
- Brake operation is faulty.

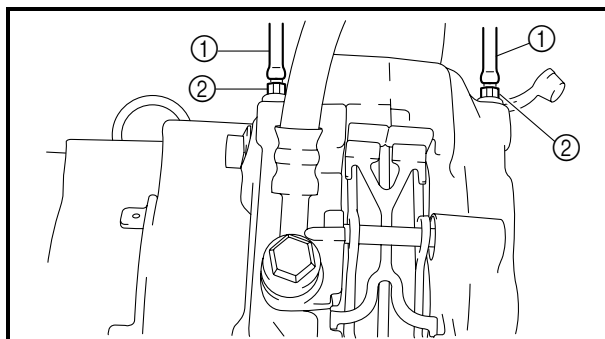
If the brake system is not properly bled a loss of braking performance may occur.

1. Bleed:

- Brake system

Air bleeding steps:

- a. Fill the brake master cylinder reservoir with the proper brake fluid.
- b. Install the diaphragm. Be careful not to spill any fluid or allow the brake master cylinder reservoir to overflow.
- c. Connect clear plastic hoses ① tightly to the brake caliper bleed screws ②.
- d. Place the other ends of the hoses in a container.
- e. Slowly apply the brake lever several times.
- f. Pull the lever in, then hold the lever in position.
- g. Loosen the bleed screws and allow the brake lever to travel towards its limit.
- h. Tighten the bleed screws when the brake lever limit has been reached, then release the lever.



- i. Repeat steps (e) to (h) until all of the air bubbles have disappeared from the fluid.
- j. Tighten the bleed screws.



Bleed screw:
6 Nm (0.6 m · kg, 4.3 ft · lb)

NOTE:

If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours.

Repeat the bleeding procedure when the tiny bubbles in the system have disappeared.

- k. Add brake fluid to the proper level.

⚠ WARNING

After bleeding the brake system, check the brake operation.

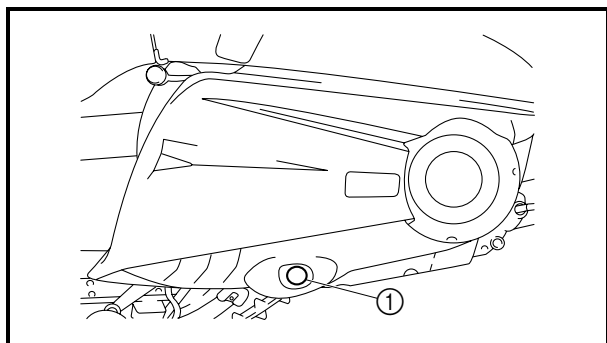
DRIVE CHAIN

Oil level inspection

⚠ WARNING

The engine and muffler will be very hot after the engine has run. Avoid touching a hot engine and muffler while they are still hot with any part of your body or clothing during inspection or repair.

1. Place the machine on a level surface.
2. Check:
 - Oil level



Checking steps:

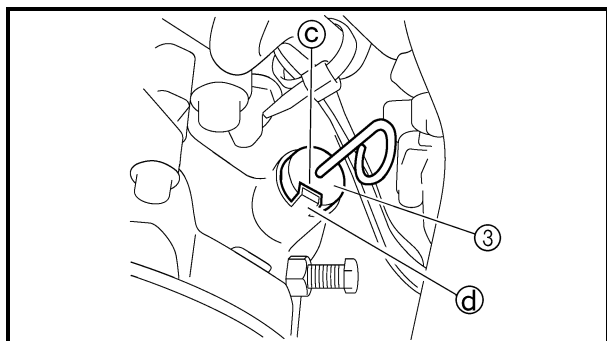
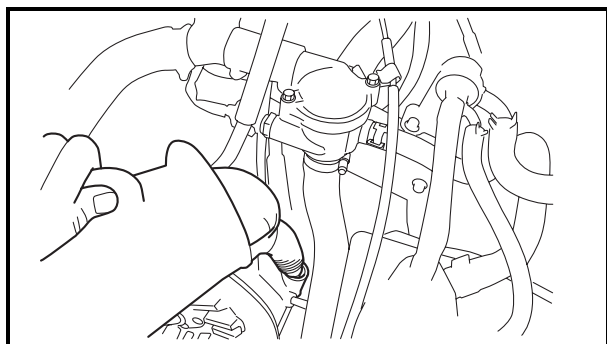
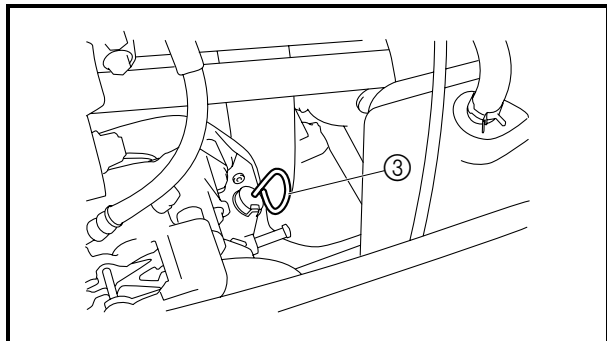
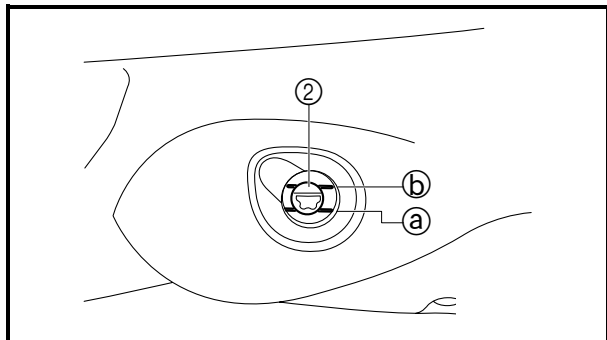
- Remove the rubber cap ①.
- Check the oil level through the check window ② located on the drive chain housing.
- If the oil is below the minimum level mark ③, remove the dipstick ③ and add sufficient oil to the maximum level mark ④.



Recommended oil:
Gear oil "GL-3"
75W or 80W

CAUTION:

Make sure that no foreign material enters the drive chain housing.

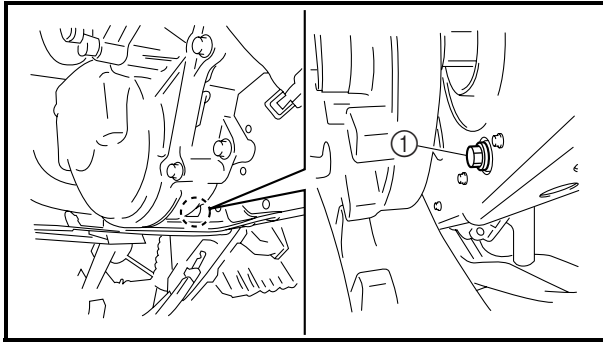


- Reinstall the dipstick ③.

NOTE:

Align the notch ③ of the dipstick handle with the projection ④ of the drive chain housing.

- Install the rubber cap.



Oil replacement

Oil replacement steps:

- Place the oil pan under the drain hole.
- Remove the oil drain bolt (along with the gasket) ① and drain the oil.

CAUTION:

Be sure to remove any oil from the heat protector.

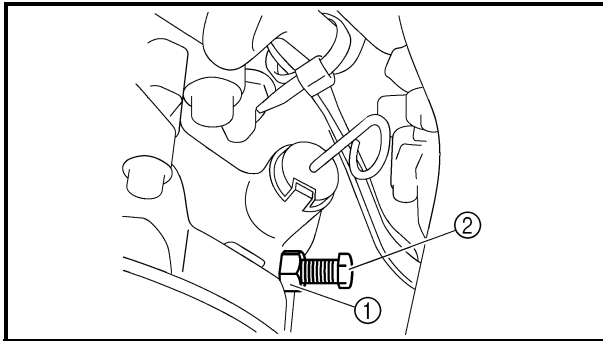
- Install the new gasket and oil drain bolt ①.



Oil drain bolt:
16 Nm (1.6 m · kg, 11 ft · lb)



Recommended oil:
Gear oil “GL-3”
75W or 80W
Oil capacity:
0.35 L (0.31 Imp qt, 0.37 US qt)



Chain slack adjustment

1. Adjust:

- Drive chain slack

Adjustment steps:

- Loosen the locknut ①.
- Turn the adjusting bolt ② clockwise until it is finger tight, and then loosen it 1/4 turn.
- Hold the adjusting bolt ② in place while tightening the chain adjusting locknut ①.



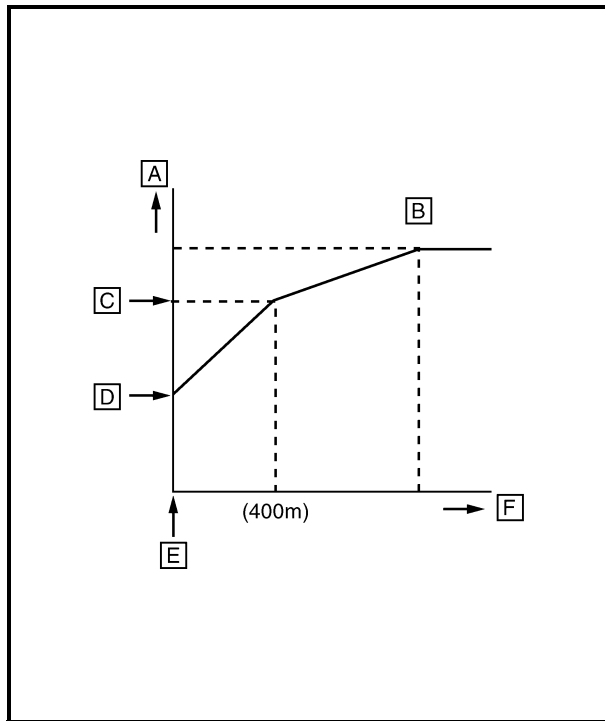
Drive chain adjusting locknut:
25 Nm (2.5 m · kg, 18 ft · lb)

TUNING**CLUTCH****High altitude**

W	White	Y	Yellow	L	Blue
---	-------	---	--------	---	------

Specifications

[A] Elevation	~ 800 m (~ 2,500 ft)	600 ~ 1,400 m (2,000 ~ 4,500 ft)	1,200 ~ 2,000 m (4,000 ~ 6,500 ft)	1,800 ~ 2,600 m (6,000 ~ 8,500 ft)	2,400 ~ 3,000 m (8,000 ~ 10,000 ft)
[B] Engine idle speed	1,400 ± 100 r/min	←	←	←	←
[C] Engagement r/min	Approx. 2,400 r/min	←	Approx. 2,500 r/min	←	Approx. 2,600 r/min
[D] Shift r/min	Approx. 8,500 r/min	←	←	←	←
[E] Main jet	[b] Refer to "HIGH ALTITUDE SETTINGS" in "MAINTENANCE SPECIFICATIONS".				
[F] Pilot jet					
[G] Pilot screw					
[H] Secondary reduction ratio (number of links)	20/39 (68 L)	←	19/39 (68 L)	←	←
[I] Primary sheave spring	90501-550A2	←	←	←	90501-580A1
[J] Color	W-L-W	←	←	←	L-Y-L
[K] Free length	82.3 mm (3.24 in)	←	←	←	81.4 mm (3.20 in)
[L] Preload	196 N (20 kg, 44 lb)	←	←	←	←
[M] Spring rate	22.1 N/mm (2.25 kg/mm, 126 lb/in)	←	←	←	24.5 N/mm (2.5 kg/mm, 140 lb/in)
[N] Wire diameter	5.5 mm (0.217 in)	←	←	←	5.8 mm (0.228 in)
[O] Outside diameter	59.5 mm (2.34 in)	←	←	←	←
[P] Weight (ID)	8FN-17605-00 (8FN00)	←	←	←	←
[Q] Weight rivet	Steel 17.2 (OUT)	Steel 17.2 with hole (OUT)	Steel 13.3 with hole (OUT)	Aluminum 13.3 with hole (OUT)	None (OUT)
	Steel 17.2 with hole (IN)	Steel 17.2 with hole (IN)	Steel 13.3 with hole (IN)	Aluminum 13.3 with hole (IN)	None (IN)
[R] Weight bushing	VESPEL TP-8549	←	←	←	←
[S] Roller outer dia.	15.6 mm (0.61 in)	←	←	←	←
[T] Roller bushing	VESPEL TP-8549	←	←	←	←
[U] Pri. clutch shim	None	←	←	←	←
[V] Secondary sheave spring	90508-60012	←	←	←	←
[W] Color	P	←	←	←	←
[X] Free length	75 mm (2.95 in)	←	←	←	←
[Y] Preload rate	60° (3-3) 1,211 kg · mm/rad	←	←	←	←
[Z] Wire diameter	6.0 mm (0.236 in)	←	←	←	←
[a] Outside diameter	69.5 mm (2.74 in)	←	←	←	←
[b] Sec. torque cam angle	39°	←	←	←	←
[c] Sec. clutch shim	1.0 mm (0.04 in)	←	←	←	←



The clutch may require tuning depending upon where the machine will be operated and the desired handling characteristics. The clutch can be tuned by changing the engagement and shifting speeds. Clutch engagement speed is defined as the engine speed at which the machine first begins to move from a complete stop.

Clutch shifting speed is defined as the engine speed reached when the machine has travelled 800 m (2,500 ft) after being started at full-throttle from a dead stop.

Normally, when a machine reaches shifting speed, the vehicle speed increases but the engine speed remains nearly constant. Under unfavorable conditions (wet snow, icy snow, hills, or rough terrain), however, engine speed may decrease after the shifting speed has been reached.

- [A] Engine speed
- [B] Good condition
- [C] Clutch shifting speed
- [D] Clutch engagement speed
- [E] Starting position
- [F] Distance travelled 800 m (2,500 ft)

GEAR SELECTION

The reduction ratio of the driven gear to the drive gear must be set according to the snow conditions. If there are many rough surfaces or unfavorable snow conditions, the drive/driven gear ratio should be increased. If the surfaces are fairly smooth or better snow conditions exist, decrease the ratio.

Gear ratio chart

The drive and driven gears and the chains shown in the gear ratio chart are available as options. The figures containing a decimal point represent the drive/driven gear ratios, while the bottom numbers designate the number of links in the chain.

① Chain and sprocket part number

[A] Parts name	[B] Teeth & links	[C] Parts no.	[D] Standard
[E] Drive sprocket	19 teeth	8FA-17682-90	
	20 teeth	8FA-17682-00	
	21 teeth	8FA-17682-10	
	22 teeth	8FA-17682-20	
	23 teeth	8FA-17682-30	
	24 teeth	8FA-17682-40	
[F] Driven sprocket	38 teeth	8FB-47587-80	
	39 teeth	8FB-47587-90	√
	40 teeth	8FB-47587-00	
[G] Chain	68 links	94890-09068	√
	70 links	94890-09070	

② Gear ratio

[A] Drive gear \ [B] Driven gear	19 teeth	20 teeth	21 teeth	22 teeth	23 teeth	24 teeth
38 teeth		1.90 68 links	1.81 68 links	1.73 68 links	1.65 70 links	1.58 70 links
39 teeth	2.05 68 links	1.95 68 links	1.86 68 links	1.77 70 links	1.70 70 links	1.63 70 links
40 teeth	2.11 68 links	2.00 68 links	1.91 70 links	1.82 70 links	1.74 70 links	1.67 70 links

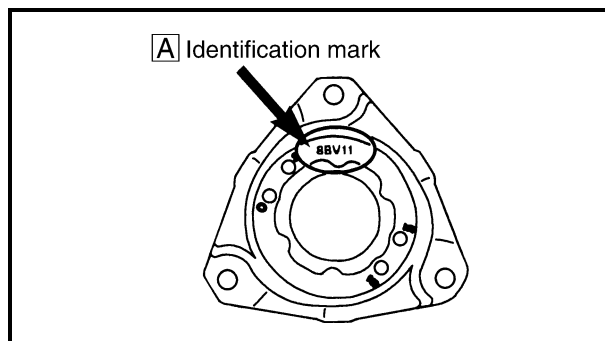
③ Secondary sheave spring

[A] Part No.	[B] Spring rate N · mm/rad (kg · mm/rad)	[C] Preload N/mm (kg/mm) (lb/in)	[D] Color	[E] Wire gauge mm (in)	[F] No. of coils	[G] Free length mm (in)	[H] Outside diameter mm (in)	[I] Standard
90508-500B1	6003 (613)	6.2 (0.63), 35.28	Brown	5.0 (0.196)	5.19	75 (2.95)	69.5 (2.736)	
90508-536A9	7147 (729)	7.3 (0.74), 41.44	Red	5.3 (0.209)	5.53	75 (2.95)	69.5 (2.736)	
90508-556A2	8314 (848)	8.5 (0.87), 48.72	Green	5.5 (0.217)	5.53	75 (2.95)	69.5 (2.736)	
90508-556A7	9460 (965)	10.2 (1.04), 58.24	Silver	5.5 (0.217)	4.86	75 (2.95)	69.5 (2.736)	
90508-60012	11876 (1211)	12.3 (1.26), 70.56	Pink	6.0 (0.236)	5.53	75 (2.95)	69.5 (2.736)	√
90508-60007	12654 (1290)	13.5 (1.37), 76.72	White	6.0 (0.236)	5.19	75 (2.95)	69.5 (2.736)	

④ Secondary spring twist angle

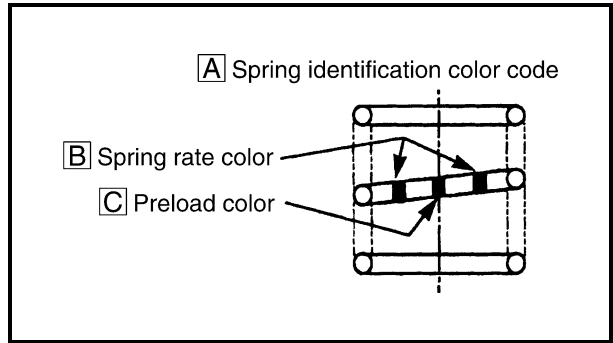
<div><div>A</div> Seat</div> <div><div>B</div> Sheave</div>	0	3	6	9
1	10°	40°	70°	100°
2	20°	50°	80°	110°
3	30°	60°	90°	120°

⑤ Torque cam (secondary spring seat)



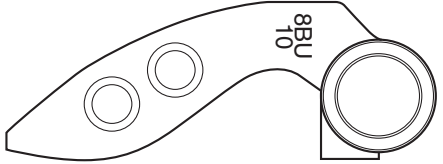
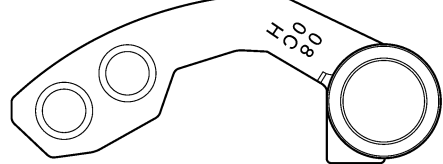
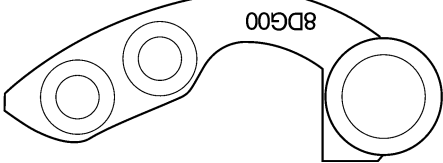
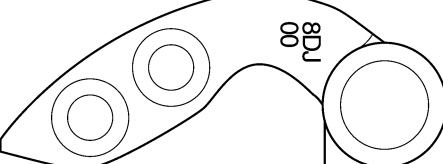
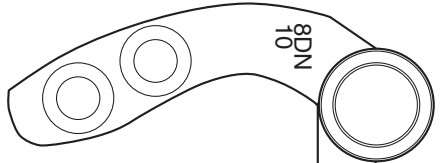
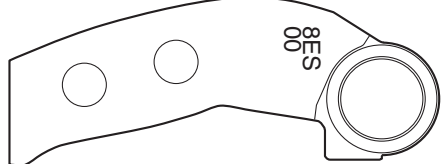
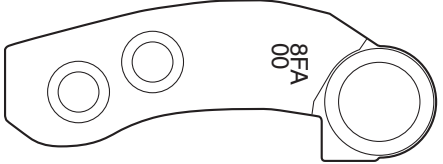
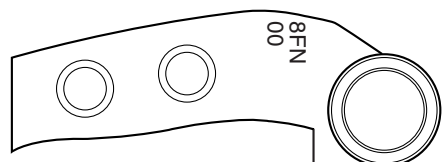
<div>B</div> Effects	<div>C</div> Part no.	<div>D</div> Cam angle	<div>E</div> Identification mark	<div>F</div> Standard
<div>G</div> Quicker upshifting during acceleration <div>H</div> Quicker backshifting under load	8FA-17604-00	51-43°	8BVFA	
	8BV-17604-71	47°	8BV71	
	8BV-17604-51	45°	8BV51	
	8BV-17604-31	43°	8BV31	
	8BV-17604-11	41°	8BV11	
	8BV-17604-91	39°	8BV91	√

⑥ Primary spring



D Parts No.	E Spring rate N/mm (kg/mm)	F Preload N (kg)	G Color	H Wire gauge mm (in)	I Outside diameter mm (in)	J No. of coils	K Free length mm (in)	L Standard
90501-550A2	19.6 (2.00)	196 (20)	Blue-Blue-Blue	5.5 (0.217)	59.5 (2.34)	4.89	83.4 (3.28)	
90501-550A3	22.1 (2.25)	196 (20)	White-Blue-White	5.5 (0.217)	59.5 (2.34)	4.56	82.3 (3.24)	√
90501-551L3	19.6 (2.00)	294 (30)	Blue-Pink-Blue	5.5 (0.217)	59.5 (2.34)	4.91	88.4 (3.48)	
90501-551L9	19.6 (2.00)	343 (35)	Blue-Silver-Blue	5.5 (0.217)	59.5 (2.34)	4.91	90.9 (3.58)	
90501-552L5	19.6 (2.00)	392 (40)	Blue-Green-Blue	5.5 (0.217)	59.5 (2.34)	4.91	93.4 (3.68)	
90501-580A1	24.5 (2.50)	196 (20)	Yellow-Blue-Yellow	5.8 (0.228)	59.5 (2.34)	4.91	81.4 (3.20)	
90501-581L5	24.5 (2.50)	294 (30)	Yellow-Pink-Yellow	5.8 (0.228)	59.5 (2.34)	4.92	85.4 (3.36)	
90501-581L6	27.0 (2.75)	294 (30)	Green-Pink-Green	5.8 (0.228)	59.5 (2.34)	4.66	84.3 (3.32)	
90501-582L1	24.5 (2.50)	343 (35)	Yellow-Silver-Yellow	5.8 (0.228)	59.5 (2.34)	4.92	87.4 (3.44)	
90501-582L2	27.0 (2.75)	343 (35)	Green-Silver-Green	5.8 (0.228)	59.5 (2.34)	4.66	86.1 (3.39)	
90501-582L6	22.1 (2.25)	392 (40)	White-Green-White	5.8 (0.228)	59.5 (2.34)	5.25	91.2 (3.59)	
90501-582L7	24.5 (2.50)	392 (40)	Yellow-Green-Yellow	5.8 (0.228)	59.5 (2.34)	4.92	89.4 (3.52)	
90501-583L0	19.6 (2.00)	441 (45)	Blue-White-Blue	5.8 (0.228)	59.5 (2.34)	5.65	95.9 (3.78)	
90501-583L1	22.1 (2.25)	441 (45)	White-White-White	5.8 (0.228)	59.5 (2.34)	5.25	93.4 (3.68)	
90501-583L4	22.1 (2.25)	343 (35)	White-Silver-White	5.8 (0.228)	59.5 (2.34)	5.25	89.0 (3.50)	
90501-583L5	22.1 (2.25)	294 (30)	White-Pink-White	5.8 (0.228)	59.5 (2.34)	5.25	86.7 (3.41)	
90501-600A1	29.4 (3.00)	196 (20)	Pink-Blue-Pink	6.0 (0.236)	59.5 (2.34)	4.81	80.1 (3.15)	
90501-601L7	29.4 (3.00)	294 (30)	Pink-Pink-Pink	6.0 (0.236)	59.5 (2.34)	4.82	83.4 (3.28)	
90501-601L8	31.9 (3.25)	294 (30)	Orange-Pink-Orange	6.0 (0.236)	59.5 (2.34)	4.60	82.6 (3.25)	
90501-602L3	29.4 (3.00)	343 (35)	Pink-Silver-Pink	6.0 (0.236)	59.5 (2.34)	4.82	85.1 (3.35)	
90501-602L8	27.0 (2.75)	392 (40)	Green-Green-Green	6.0 (0.236)	59.5 (2.34)	5.08	87.9 (3.46)	
90501-602L9	29.4 (3.00)	392 (40)	Pink-Green-Pink	6.0 (0.236)	59.5 (2.34)	4.82	86.7 (3.41)	
90501-603L2	24.5 (2.50)	441 (45)	Yellow-White-Yellow	6.0 (0.236)	59.5 (2.34)	5.39	91.4 (3.60)	
90501-603L3	27.0 (2.75)	441 (45)	Green-White-Green	6.0 (0.236)	59.5 (2.34)	5.08	89.8 (3.54)	
90501-624L8	31.9 (3.25)	343 (35)	Orange-Silver-Orange	6.2 (0.244)	59.5 (2.34)	5.00	84.2 (3.31)	

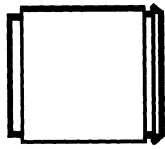
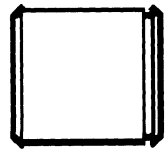
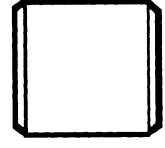
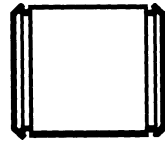
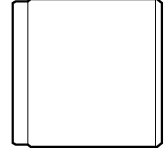
⑦ Clutch weight

[A] Parts No.	[B] Weight g (oz) without bush and rivets	[C] Shape & ID mark	[D] Standard
8BU-17605-20	45.41 (1.603)		
8CH-17605-10	35.32 (1.246)		
8DG-17605-00	34.26 (1.208)		
8DJ-17605-00	37.77 (1.332)		
8DN-17605-10	39.76 (1.402)		
8ES-17605-00	54.63 (1.928)		
8FA-17605-10	63.81 (2.251)		
8FN-17605-00	75.28 (2.657)		√

⑧ Weight rivets

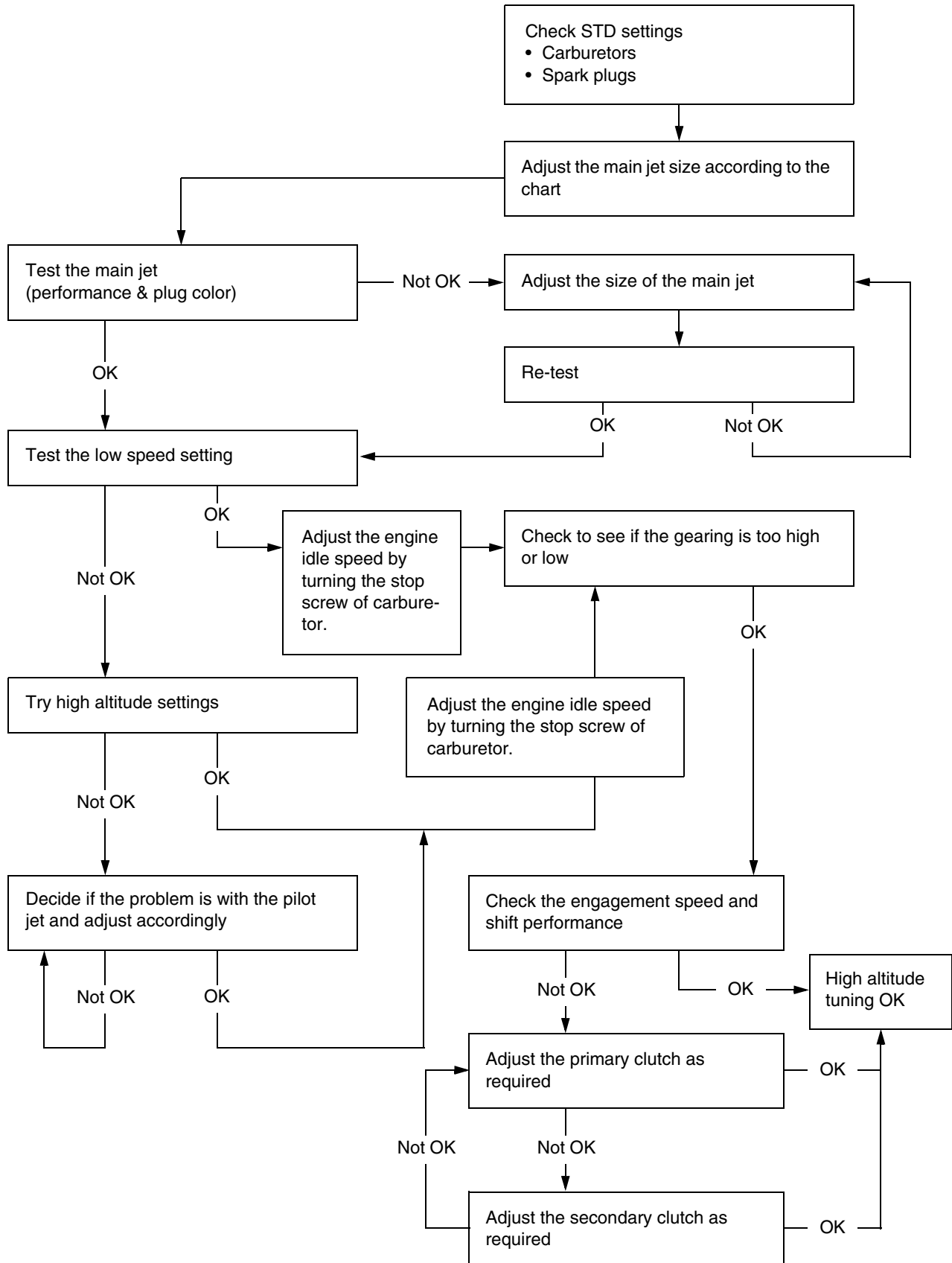
A Parts No.	B Material	C Length mm (in)	D Weight g (oz)	E Standard	F Effects
90261-06033	Steel	17.2 (0.677)	4.5 (0.159)	√ (OUT)	<div> <div>ⓖ Increased force</div> <div>↑</div> <div>↓</div> <div>ⓓ Decreased force</div> </div>
90261-06034	Steel	13.9 (0.547)	3.6 (0.127)		
90269-06006	Steel	17.2 (0.677)	3.6 (0.127)	√ (IN)	
90261-06019	Steel	13.3 (0.524)	3.1 (0.109)		
90261-06015	Steel	10.3 (0.406)	2.44 (0.086)		
90266-06002	Steel	13.3 (0.524)	2.44 (0.086)		
90261-06028	Aluminum	10.3 (0.406)	0.85 (0.030)		
90266-06001	Aluminum	13.3 (0.524)	0.85 (0.030)		

⑨ Rollers

I.D. 9 mm (0.354 in)					
A Roller with bush- ing part number	B Outside diameter mm (in)	C Bushing type (P/N)	D Identification mark (Width)	E Standard	F Effects
8FG-17624-00	14.5 (0.57)	VESPEL TP-8549 90386-09001	ⓖ Grooved & Machined  (14.6 mm)		<div> <div>Ⓦ Increased force</div> <div>↑</div> <div>↓</div> <div>ⓓ Decreased force</div> </div>
8FG-17624-10	15.0 (0.59)	VESPEL TP-8549 90386-09001	ⓓ Grooved  (14.6 mm)		
8FG-17624-20	15.6 (0.61)	VESPEL TP-8549 90386-09001	ⓓ No Mark  (14.6 mm)	√	
8FG-17624-30	16.0 (0.63)	VESPEL TP-8549 90386-09001	Ⓦ Grooved & Grooved  (14.6 mm)		
8FG-17624-40	16.5 (0.65)	VESPEL TP-8549 90386-09001	ⓓ Machined  (14.6 mm)		

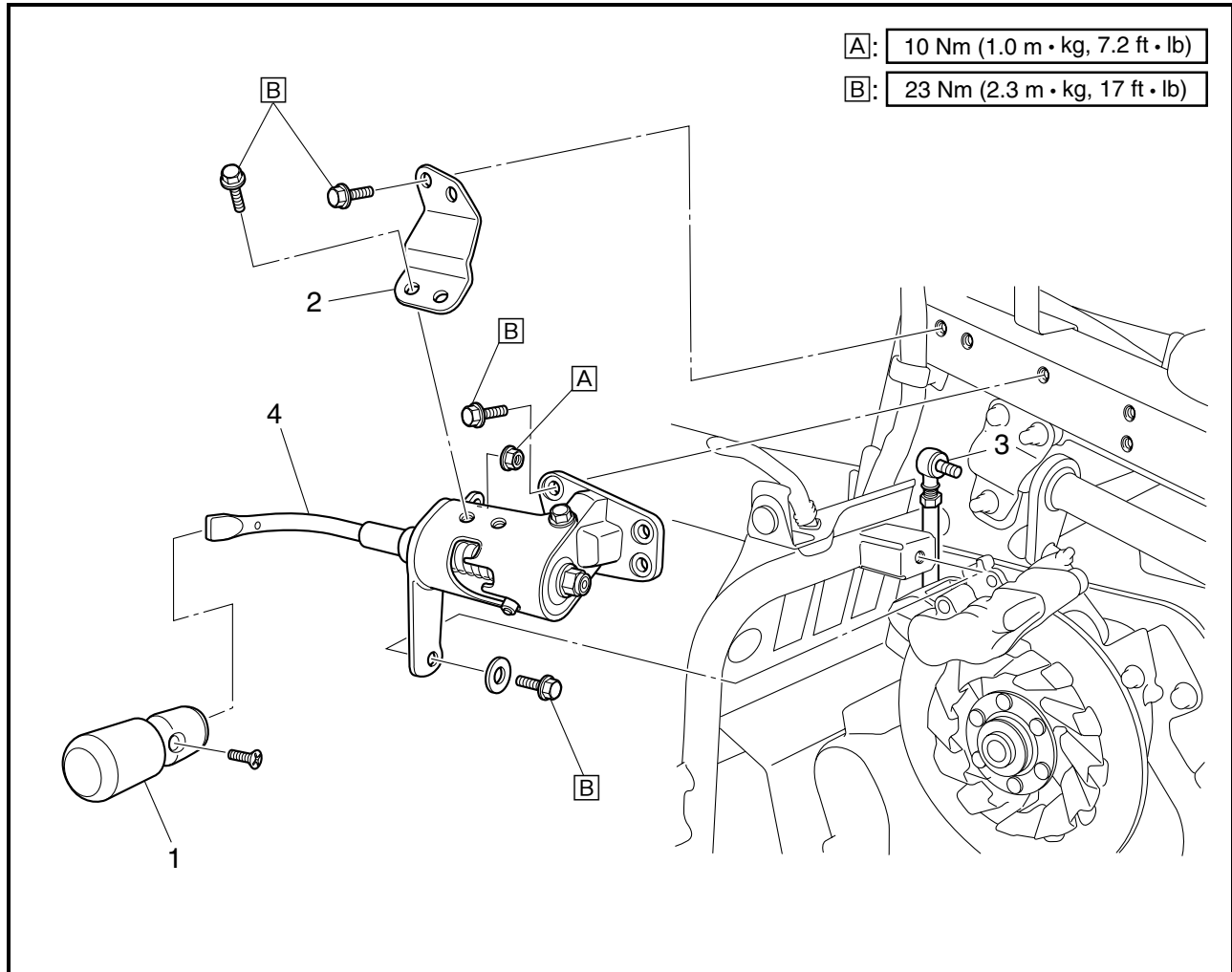
HIGH ALTITUDE TUNING

To attain the best performance in high altitude conditions, carefully tune the snowmobile as outlined below.



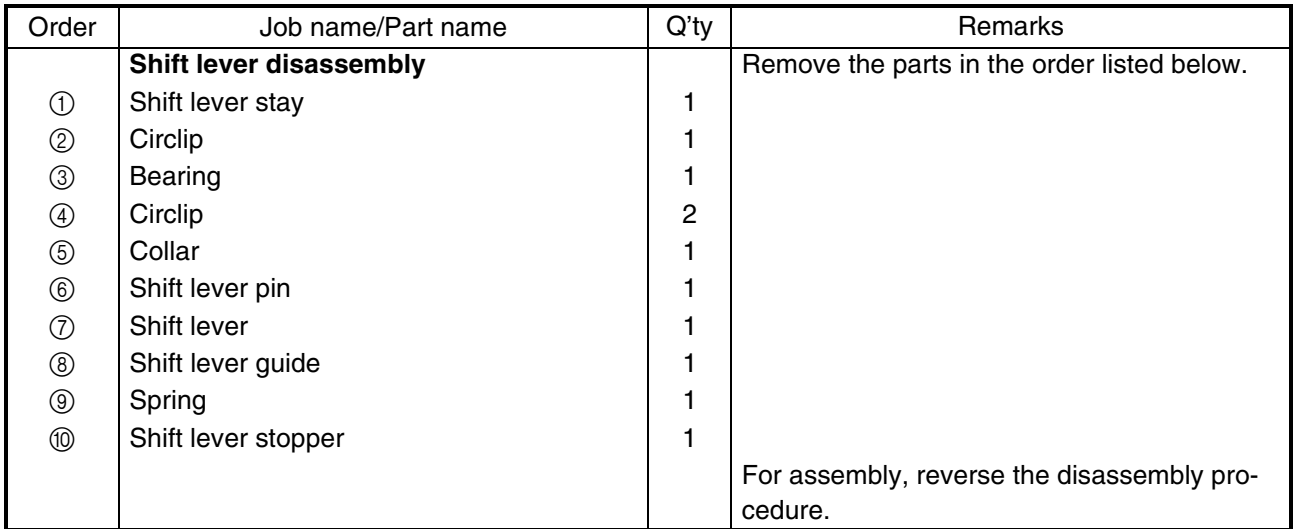
POWER TRAIN

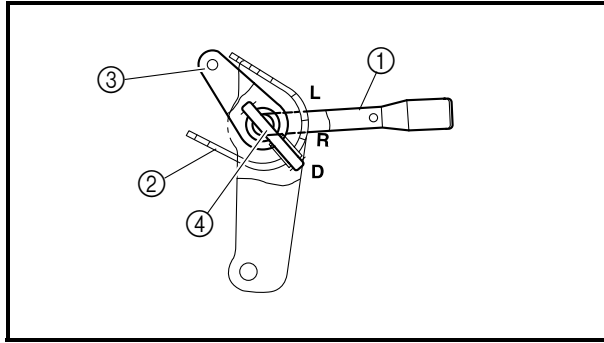
SHIFT LEVER



4

Order	Job name/Part name	Q'ty	Remarks
	Shift lever assembly removal		Remove the parts in the order listed below.
1	Right side cover	1	
2	Shift knob	1	
3	Bracket	1	Disconnect.
4	Shift rod	1	
	Shift lever assembly	1	For installation, reverse the removal procedure.

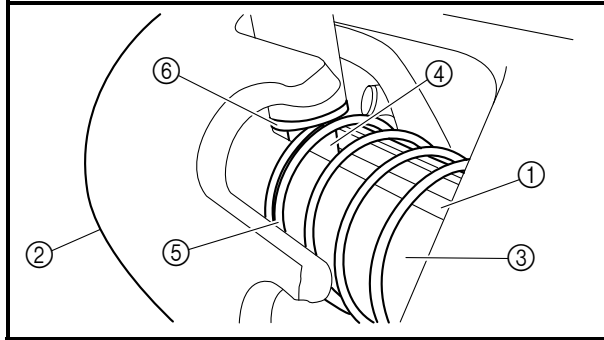




INSTALLATION

1. Install:

- Shift lever ①
- Shift lever stopper ②
- Shift guide ③
- Shift lever pin ④
- Spring



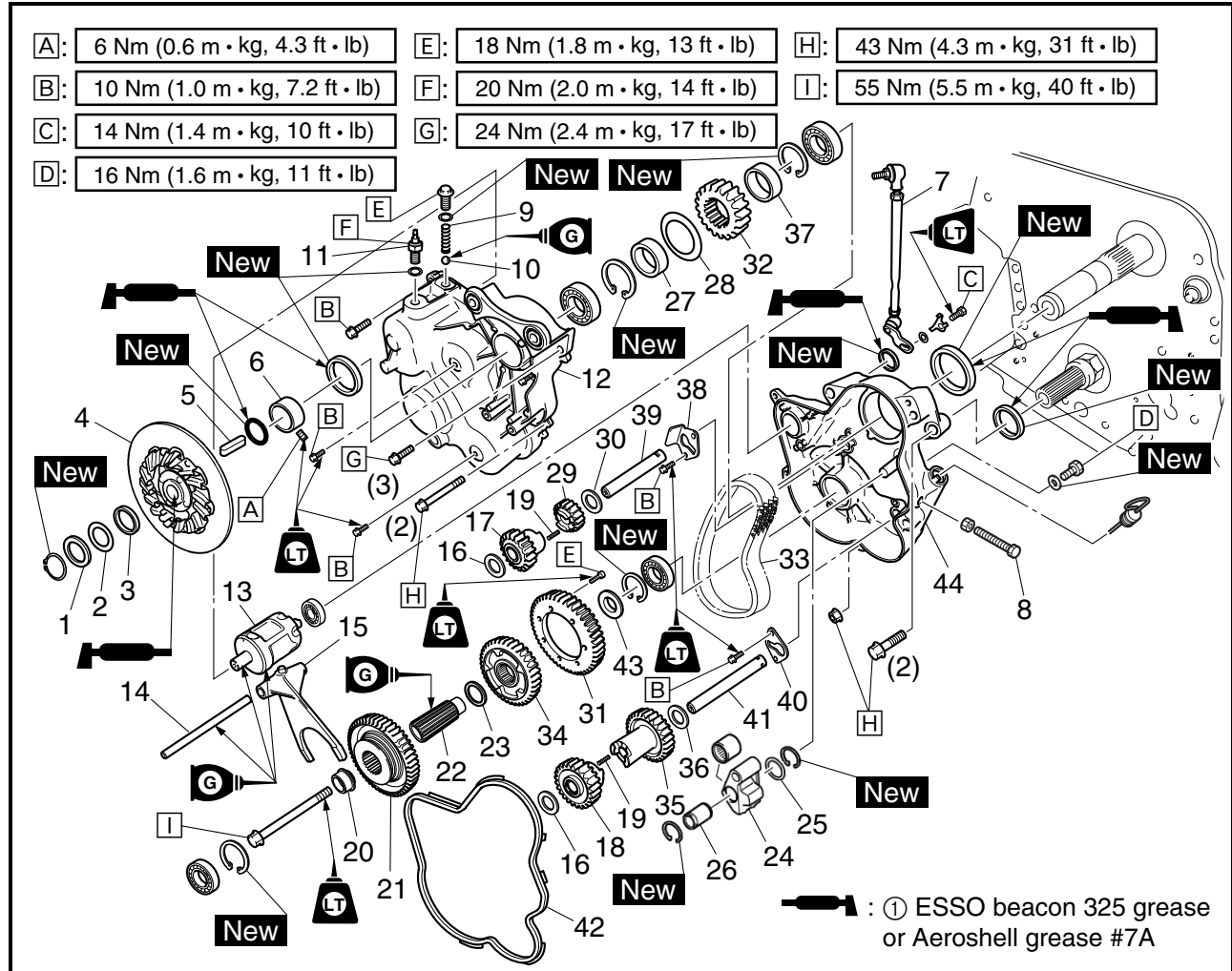
Installation steps:

- Install the shift lever ① onto the shift lever stopper ②.
- Install the shift lever guide ③ and spring ⑤ onto the shift lever, position the shift lever and shift lever guide as shown, and then install the shift lever pin ④.

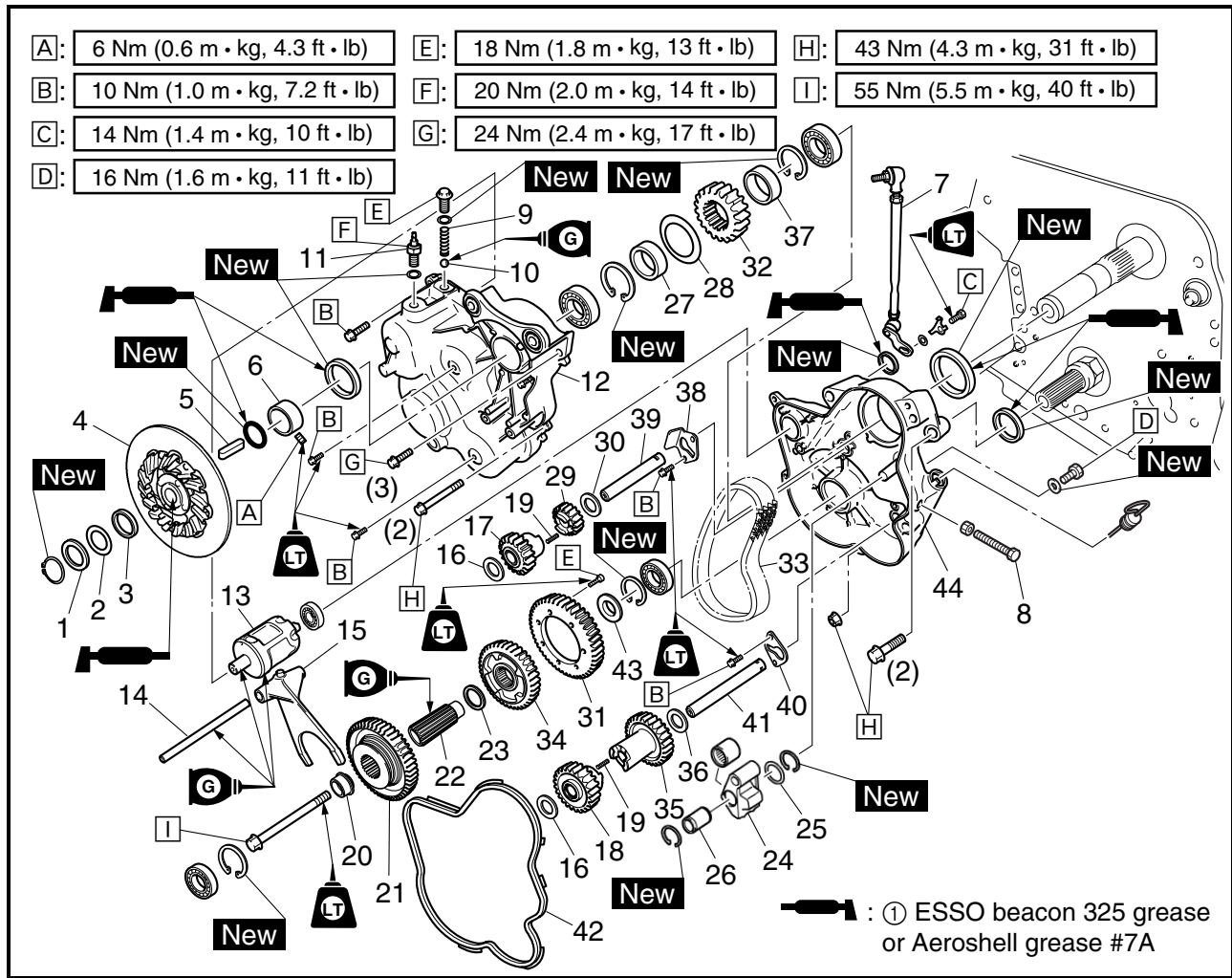
NOTE:

Make sure that the end of the spring ⑤ is installed between the washer ⑥ and the shift lever guide ③.

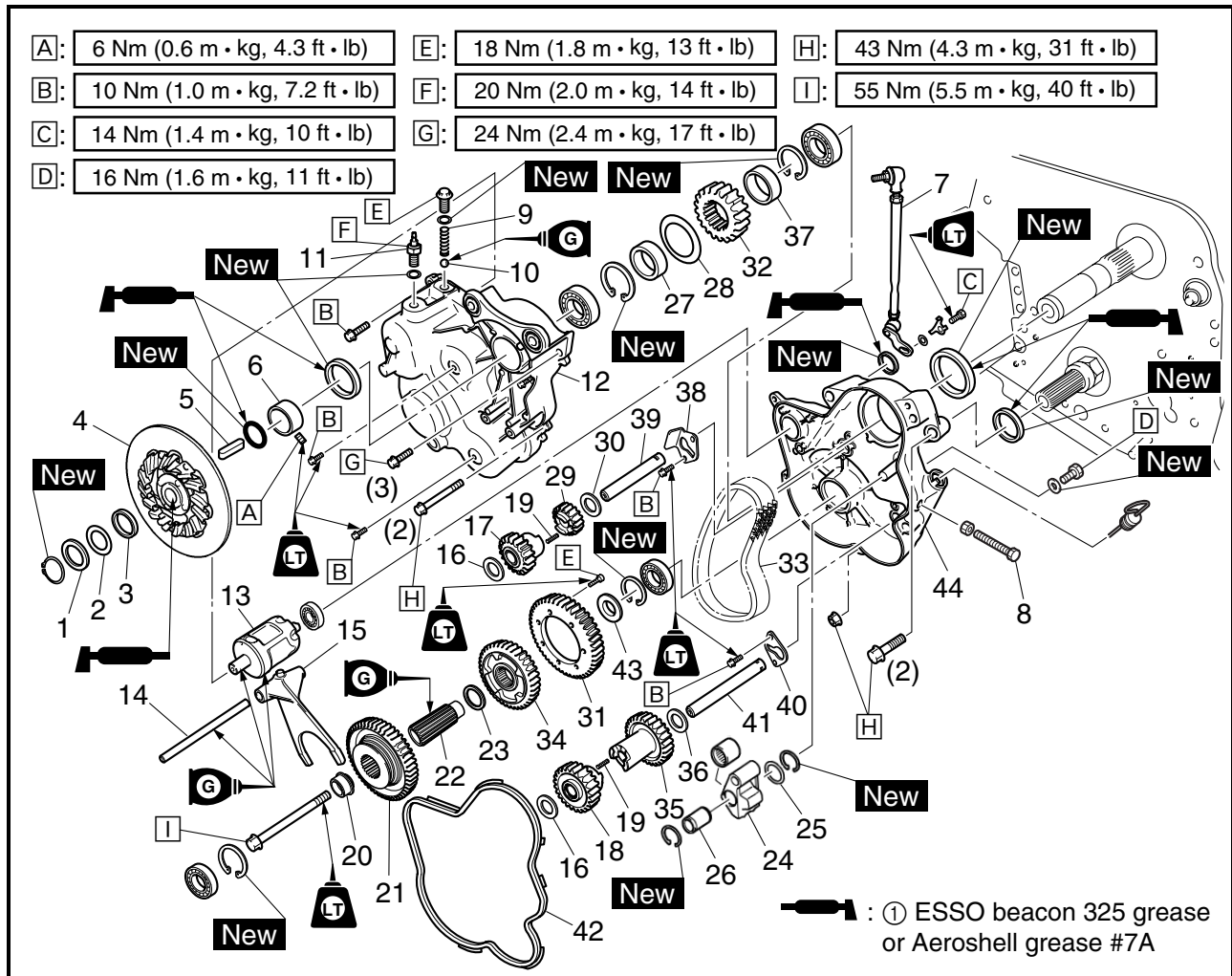
DRIVE CHAIN HOUSING



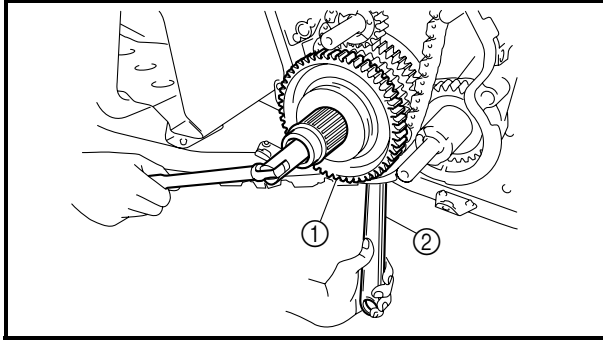
Order	Job name/Part name	Q'ty	Remarks
	Drive chain housing removal		Remove the parts in the order listed below. Refer to "SHIFT LEVER" and "BRAKE".
1	Shim	—	t = 0.5
2	Washer	1	t = 1.0
3	Collar	1	
4	Brake disc	1	
5	Straight key	1	
6	Collar	1	
7	Shift rod	1	
8	Chain tension adjusting bolt	1	Loosen.
9	Spring	1	
10	Ball	1	
11	Gear position switch	1	
12	Drive chain housing cover	1	
13	Shift drum	1	



Order	Job name/Part name	Q'ty	Remarks
14	Shift fork guide bar	1	
15	Shift fork	1	
16	Washer	2	
17	Counter gear	1	
18	Low pinion gear	1	
19	Spring	2	
20	Collar	1	
21	Driven gear	1	
22	Journal	1	
23	Washer	1	
24	Chain tensioner	1	
25	Washer	1	
26	Collar	1	
27	Collar	1	
28	Washer	1	
29	Reverse drive gear	1	



Order	Job name/Part name	Q'ty	Remarks
30	Washer	1	For installation, reverse the removal procedure.
31	Low drive gear	1	
32	Drive sprocket	1	
33	Drive chain	1	
34	Driven sprocket	1	
35	Low wheel gear	1	
36	Washer	1	
37	Collar	1	
38	Plate	1	
39	Shaft	1	
40	Plate	1	
41	Shaft	1	
42	Rubber seal	1	
43	Washer	1	
44	Drive chain housing	1	



REMOVAL

1. Remove:

- Driven gear ①

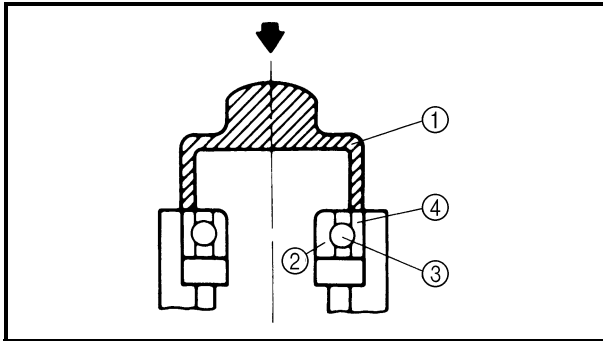
NOTE:

While holding the front axle assembly with spanner wrench ②, loosen the reverse driven gear bolt.

INSPECTION

1. Inspect:

- Drive chain housing
- Drive chain housing cover
Cracks/damage → Replace.
- Shift fork
Pitting/wear/damage → Replace.
- Oil seals (drive chain housing and cover)
Wear/damage → Replace.
- Bearings (drive chain housing and cover)
Pitting/damage → Replace.



Replacement steps:

- Remove the circlip (drive chain housing and cover).
- Remove the bearing(s) using a general bearing puller.
- Install the new bearing(s).

NOTE:

Use a socket ① that is the same size as the outside diameter of the bearing race.

CAUTION:

Do not strike the inner race ② or ball bearings ③.

Contact only the outer race ④.

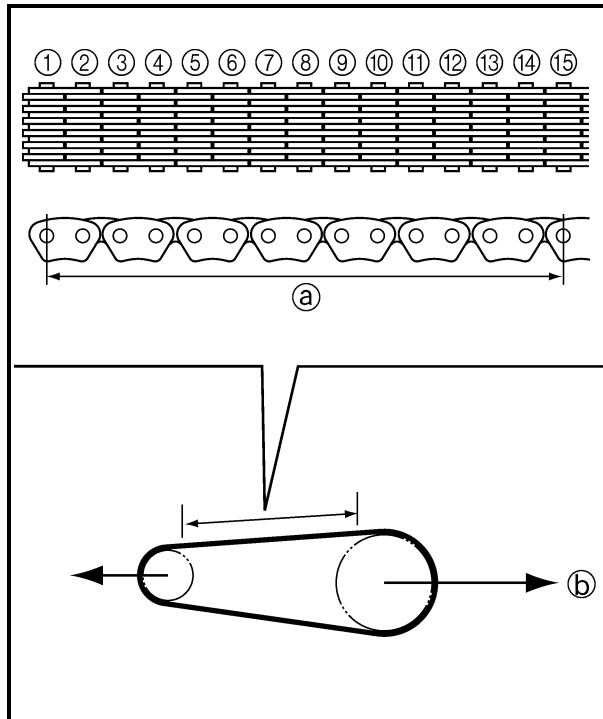
- Install a new circlip (drive chain housing and cover).

CAUTION:

Always use new circlips.

2. Inspect:

- Drive sprocket
- Driven sprocket
- Driven gear
- Reverse drive gear
- Counter gear
- Low pinion gear
- Low wheel gear
- Low drive gear
- Journal
- Chain tensioner
 - Pitting/wear/damage → Replace.
- Drive chain
 - Wear/damage → Replace.
 - Shift → Clean or replace.
- Shift lever assembly
- Bearing (chain tensioner)
 - Pitting/damage → Replace the bearing and the inner race holder as a set.



3. Measure:

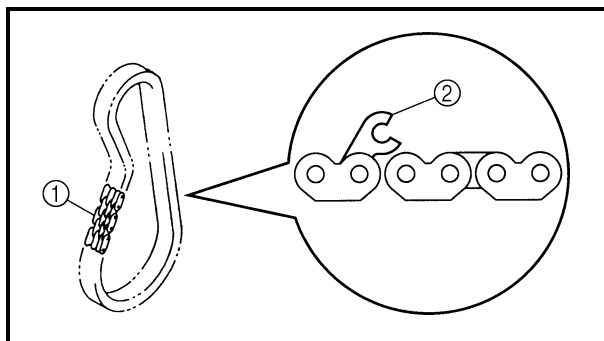
- 14 link section ① of the drive chain
 - Using a spring scale, pull on the drive chain with 36 kg (80 lb) of force ②.
 - Out of specification → Replace the drive chain.

Maximum 14 link drive chain section length:
133.35 mm (5.25 in)
Limit: 137.35 mm (5.41 in)

NOTE:

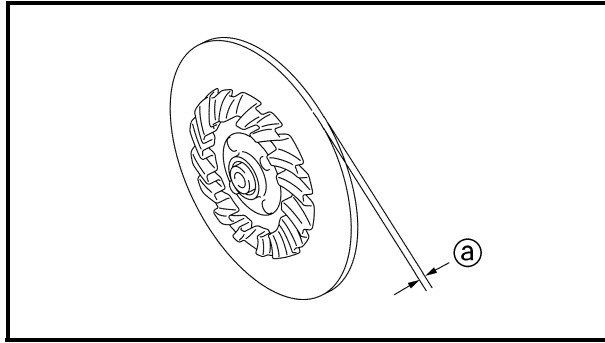
- Measure the length between drive chain pin ① and ⑮ as shown.
- Perform this measurement at two or three different places.

If replacement is necessary, always replace the chain and the sprockets as a set.



4. Inspect:

- Drive chain ①
 - Stiffness → Clean and lubricate or replace.
- Drive chain plates ②
 - Damage/wear → Replace the drive chain.
 - Cracks → Replace the drive chain.



5. Measure:

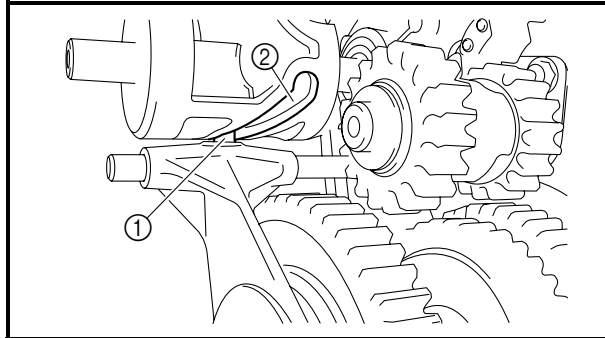
- Brake disc thickness ③

Measure the brake disc thickness 1 ~ 3 mm (0.04 ~ 0.12 in) from the edge of the brake disc.

Out of specification → Replace.



Minimum thickness:
3.5 mm (0.14 in)



INSTALLATION

1. Install:


- Shift drum

NOTE:

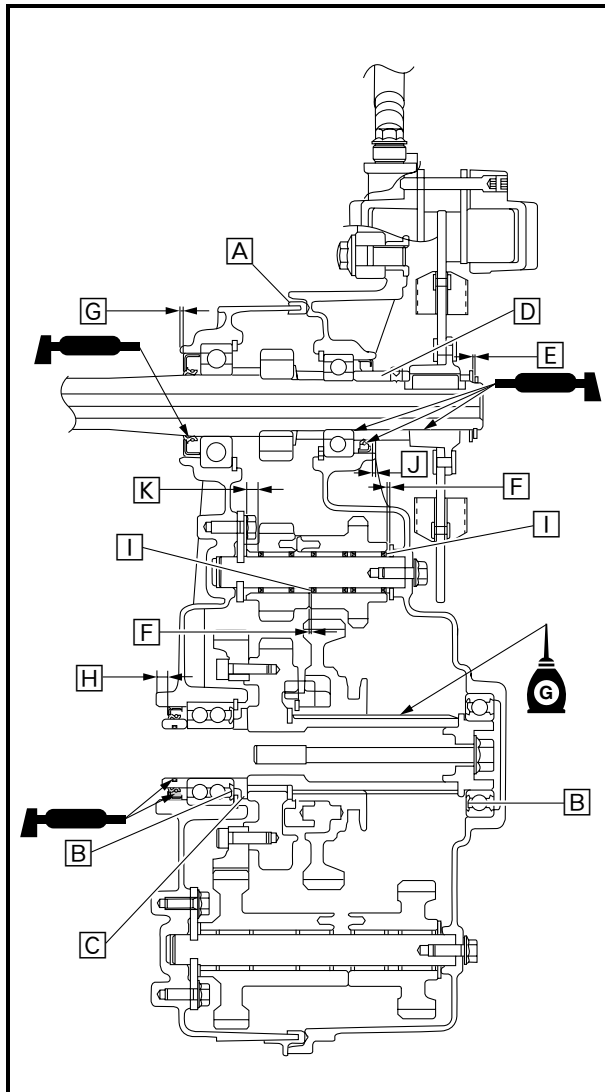
Make sure that the projection ① on the shift fork is properly seated in the shift drum groove ②.

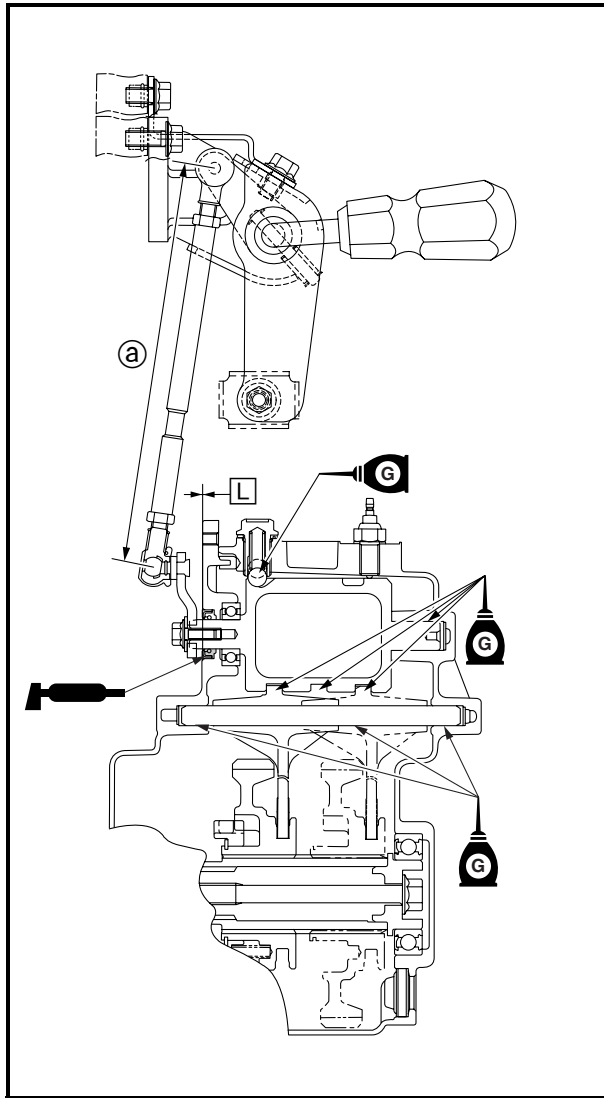
2. During installation, pay attention to the following.

- [A] Properly install the rubber seal onto the drive chain housing, making sure that there are no gaps.
- [B] Make sure that the bearing seals face towards the drive chain as shown.
- [C] Install the washer as shown.
- [D] Be sure to install the spacers in their original positions, otherwise the brake disc and shaft will stick.
- [E] 0.2 ~ 0.7 mm (0.008 ~ 0.028 in)
- [F] Make sure that the bearing does not protrude past the end of the counter gear.
- [G] 1.8 ± 0.5 mm (0.071 ± 0.020 in)
- [H] 6 ± 0.5 mm (0.236 ± 0.020 in)
- [I] Stamp side
- [J] 1.8 ± 0.5 mm (0.071 ± 0.020 in)
- [K] 5 ± 0.5 mm (0.197 ± 0.020 in)

 : ESSO beacon 325 grease or Aeroshell grease #7A

For the shaft and drive chain housing installation, refer to "SECONDARY SHAFT".





L 0 ~ 1 mm (0 ~ 0.039 in)

3. Install:

- Shift rod lock washer ①

NOTE:

Bend a lock washer tab along a flat side of the bolt.

4. Adjust:

- Shift rod length ②

Adjustment steps:

- Adjust the shift rod length.



Shift rod length:
236 mm (9.29 in)

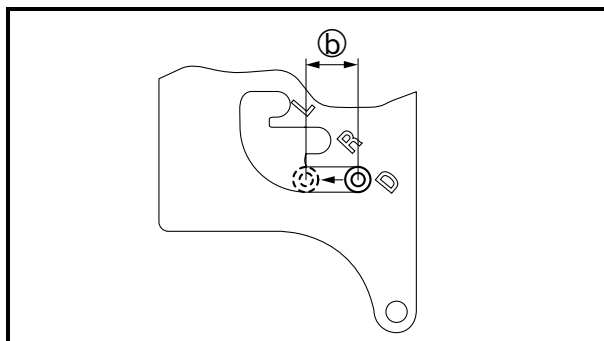
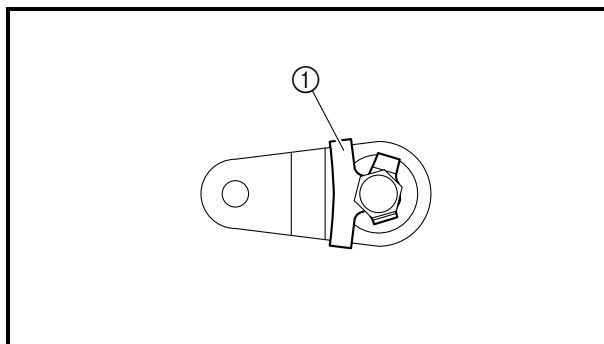
- Check that the shift lever pin moves smoothly when the shift lever is pulled out 21 mm (0.83 in) to the position ③ shown. Also, check that the shift lever pin returns to its original position by the force of the spring when the shift lever is released. If the pin moves to a different position, adjust the shift rod length.

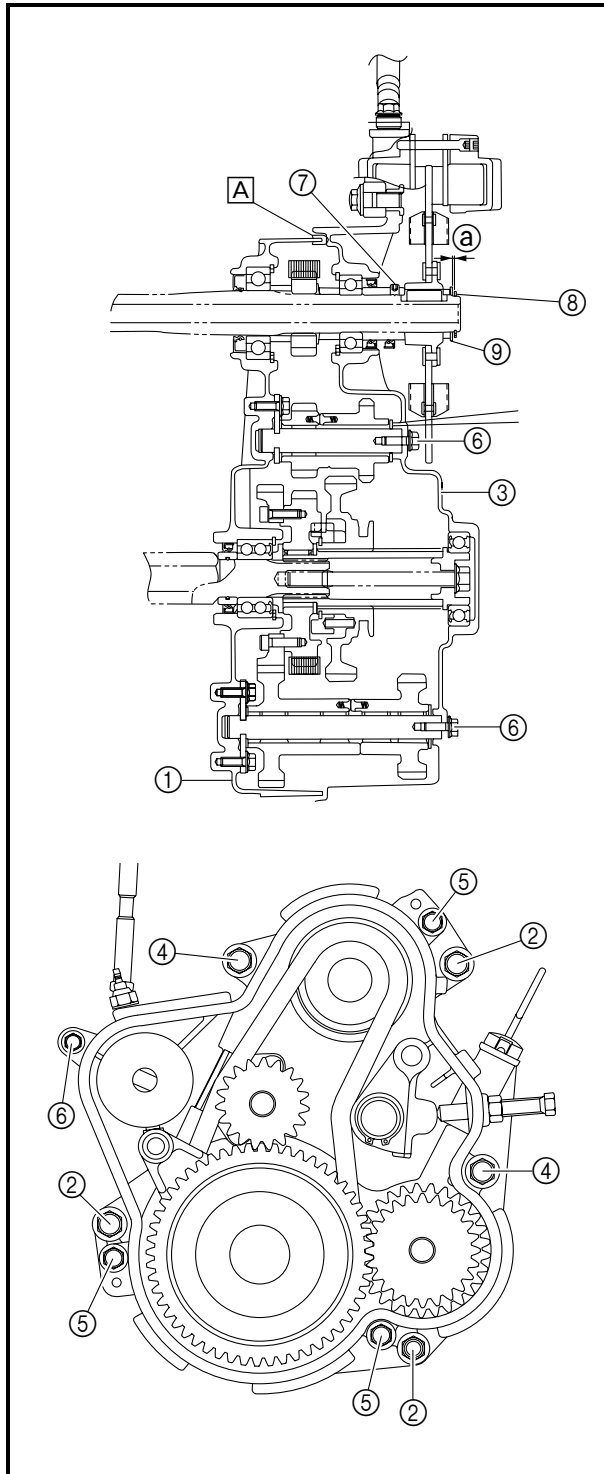
5. Fill:

- Drive chain housing oil
Refer to "DRIVE CHAIN" in CHAPTER 2.

6. Adjust:

- Drive chain slack
Refer to "DRIVE CHAIN" in CHAPTER 2.





SECONDARY SHAFT SECONDARY SHAFT AND DRIVE CHAIN HOUSING INSTALLATION

1. Install:

- Secondary shaft
- Drive chain housing

Installation steps:

- Install the secondary shaft.
- Tighten the bolt.



Secondary shaft bolt:
30 Nm (3.0 m · kg, 22 ft · lb)

- Install the drive chain housing ①.
- Tighten the bolts and nut ②.



Drive chain housing bolt and nut:
43 Nm (4.3 m · kg, 31 ft · lb)

- Install the drive chain, drive sprocket and reverse drive gear.
- Install the drive chain housing cover ③.

A Properly install the rubber seal onto the drive chain housing, making sure that there are no gaps.

- Tighten the bolts ④.



Drive chain housing cover bolt:
43 Nm (4.3 m · kg, 31 ft · lb)

- Tighten the bolts ⑤.



Drive chain housing cover bolt:
24 Nm (2.4 m · kg, 17 ft · lb)

- Tighten the bolt ⑥.



Drive chain housing cover bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

- Install the collar.
- Tighten the collar set screw ⑦.



Collar set screw:
6 Nm (0.6 m · kg, 4.3 ft · lb)
LOCTITE®

- Install the brake disc.
- Adjust the brake disc clearance.
- Adjust the drive chain slack.

2. Measure:

- Brake disc clearance ⑧

Out of the specification → Adjust.



Brake disc clearance:
0.2 ~ 0.7 mm (0.008 ~ 0.028 in)

3. Adjust:

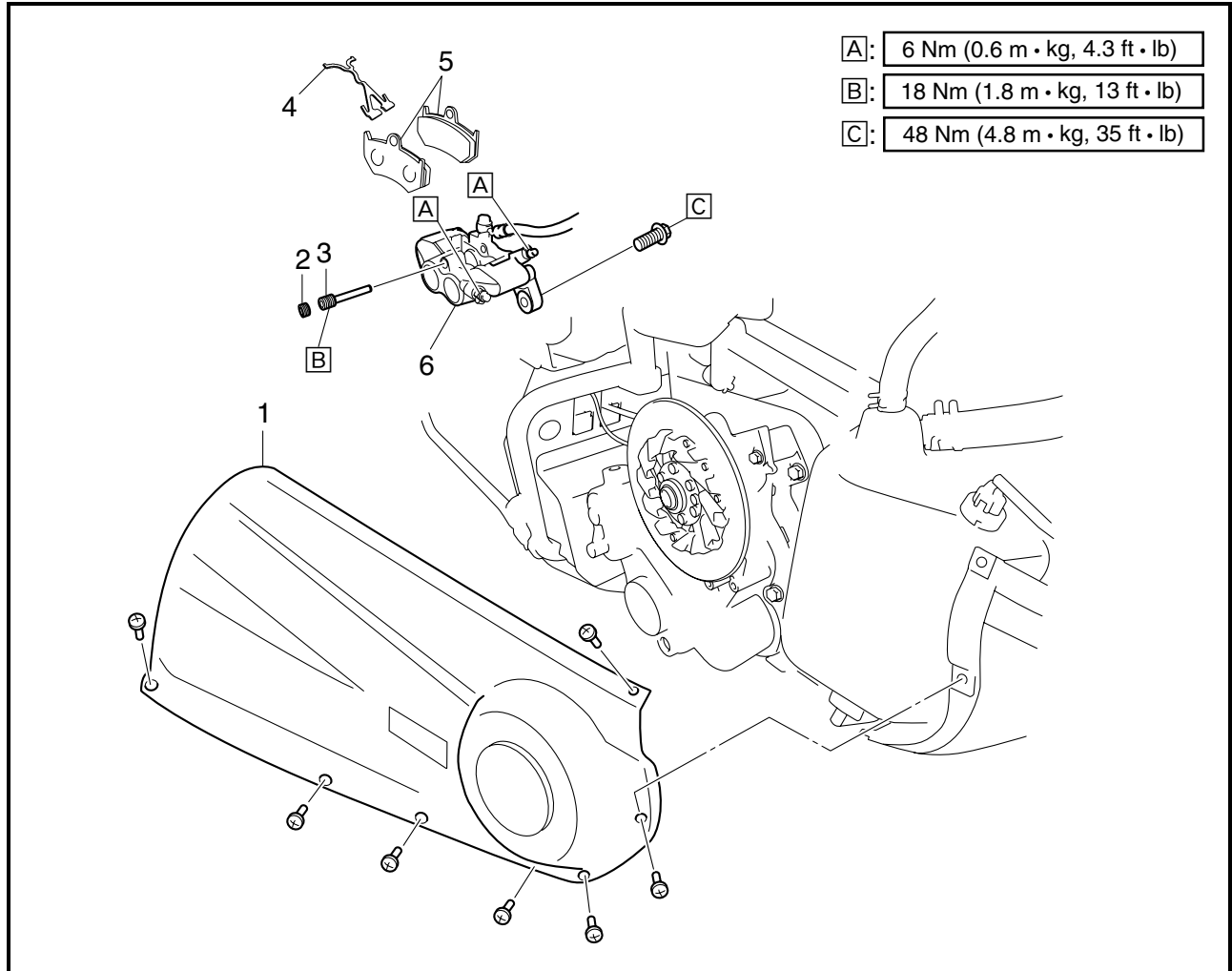
- Brake disc clearance

Adjustment steps:

- Remove the circlip ⑧.
- Adjust the brake disc clearance by adding or removing shim(s) ⑨.

Shim size	
Part number	Thickness
90201-252F1	0.5 mm (0.02 in)

- Install the new circlip.

BRAKE

Order	Job name/Part name	Q'ty	Remarks
	Brake pad removal		Remove the parts in the order listed below.
1	Right side cover	1	
2	Cap bolt	1	
3	Retaining pin	1	
4	Pad spring	1	
5	Brake pad	2	
6	Brake caliper assembly	1	
			For installation, reverse the removal procedure.

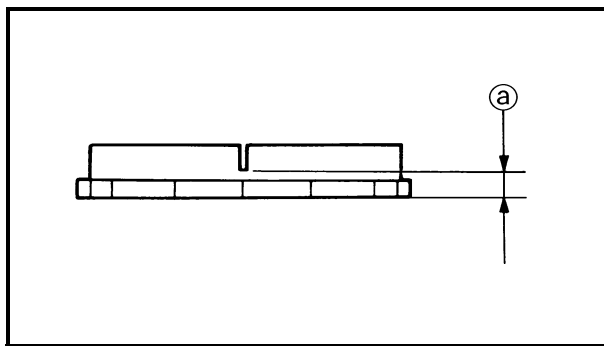
CAUTION:

Disc brake components rarely require disassembly. **DO NOT:**

- Do not disassemble components unless absolutely necessary.
- Do not use solvents on internal brake components.
- Do not use contaminated brake fluid for cleaning.
- Use only clean brake fluid.
- Do not allow brake fluid to contact the eyes, otherwise eye injury may occur.
- Do not allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.
- Do not disconnect any hydraulic connection, otherwise the entire system must be disassembled, drained, cleaned, and then properly filled and bled after reassembly.

BRAKE PAD REPLACEMENT**NOTE:**

It is not necessary to disassemble the brake caliper and brake hose in order to replace the brake pads.



1. Remove:

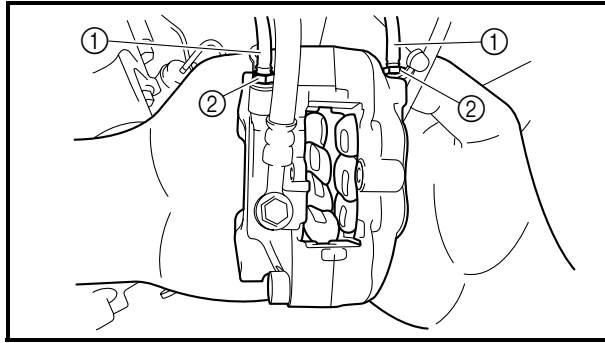
- Brake pads

NOTE:

- Do not depress the brake lever when the caliper or disc is off the machine otherwise the brake pads will be forced shut.
- Install a new brake pad spring and shims when the brake pads are replaced.
- Replace the pads as a set if either one is found to be worn to the wear limit Ⓐ.



Wear limit:
4.7 mm (0.19 in)

**2. Install:**

- Brake pads
- Pad spring

Installation steps:

- Connect a suitable hoses ① tightly to the caliper bleed screws ②. Put the other end of this hose into an open container.
- Loosen the caliper bleed screws and push the pistons into the caliper with your finger.
- Tighten the caliper bleed screws ②.



Bleed screw:
6 Nm (0.6 m · kg, 4.3 ft · lb)

- Install the brake pads and pad spring.

3. Check:

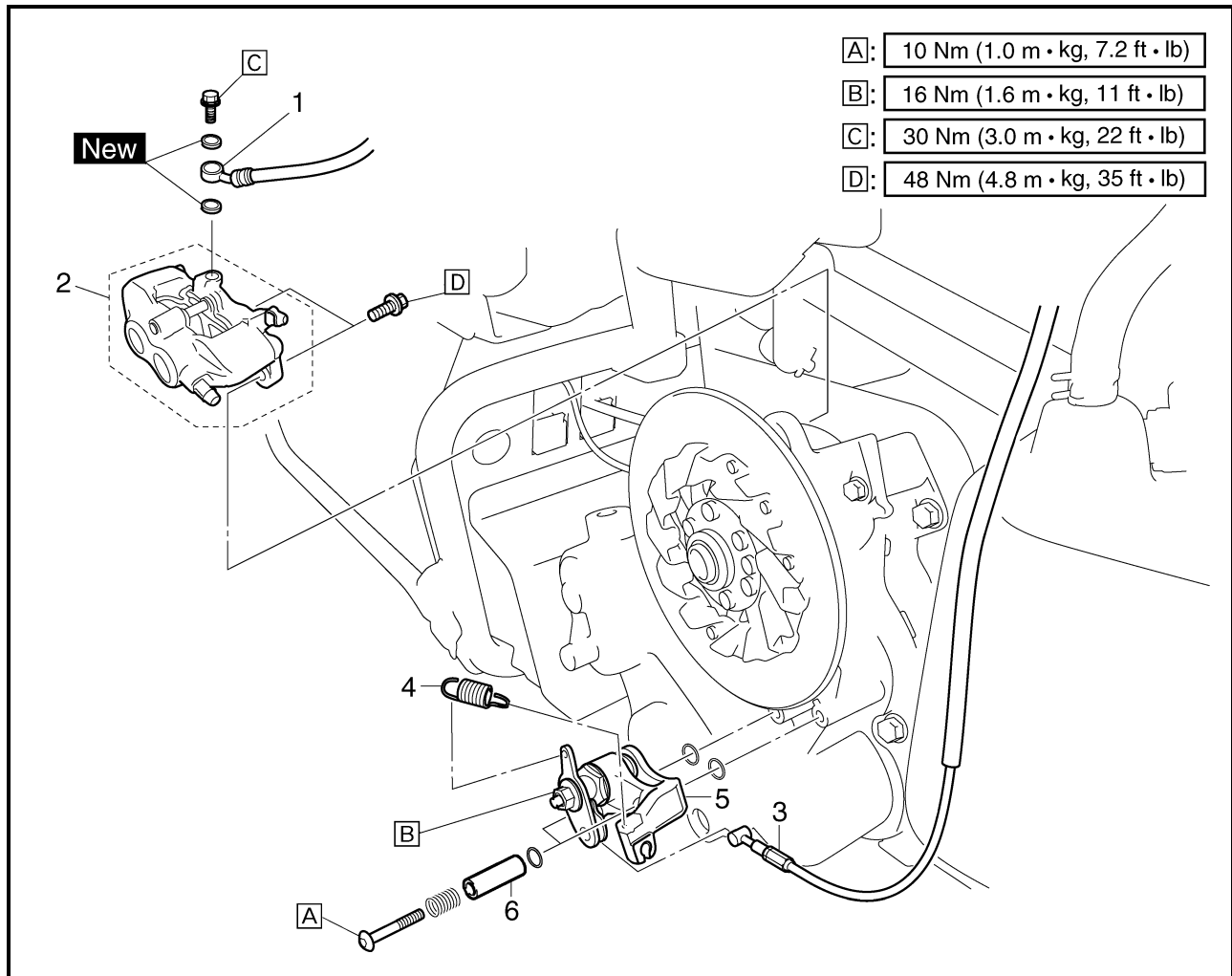
- Brake fluid level

4. Check:

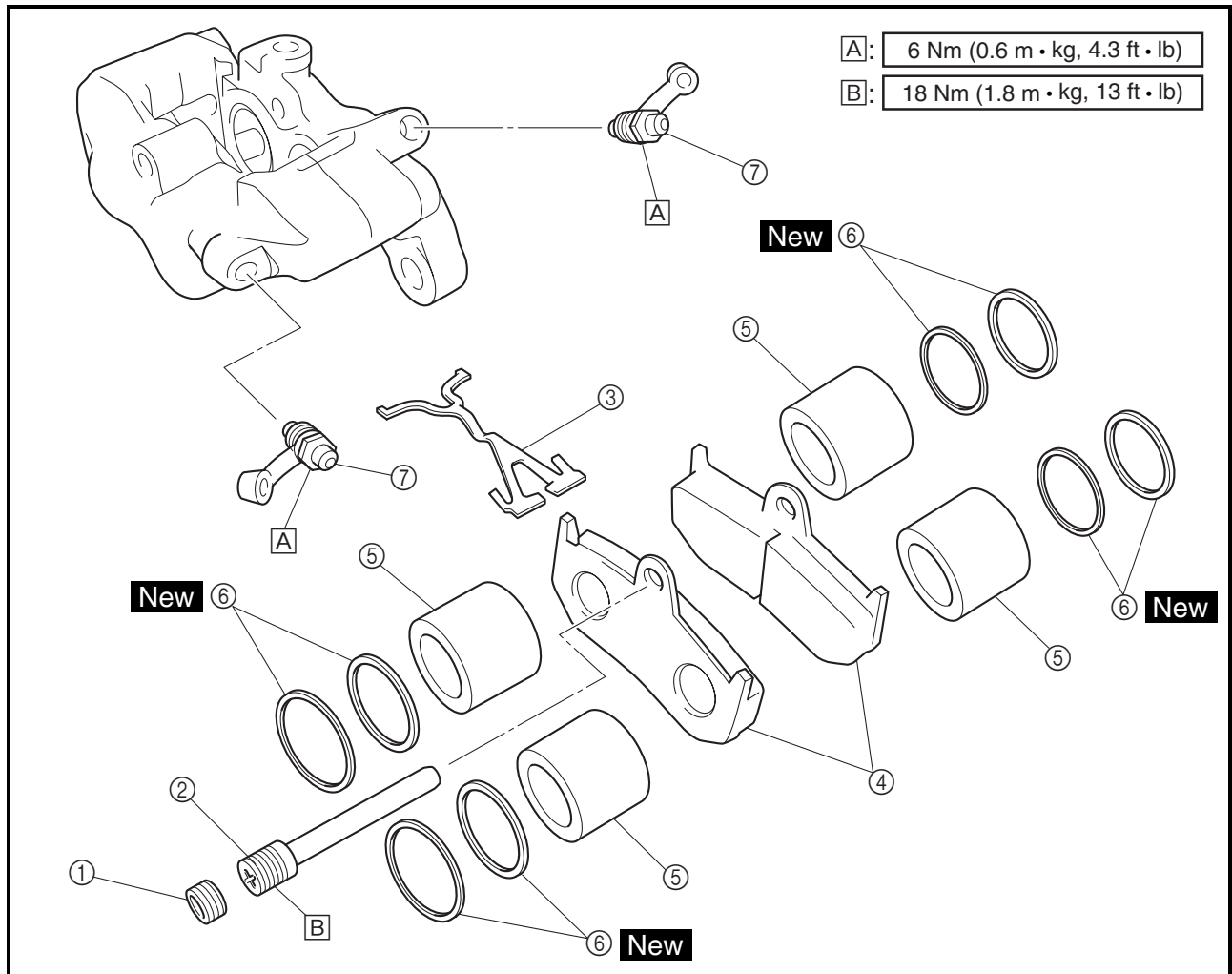
- Brake lever operation

A soft or spongy feeling → Bleed brake system.

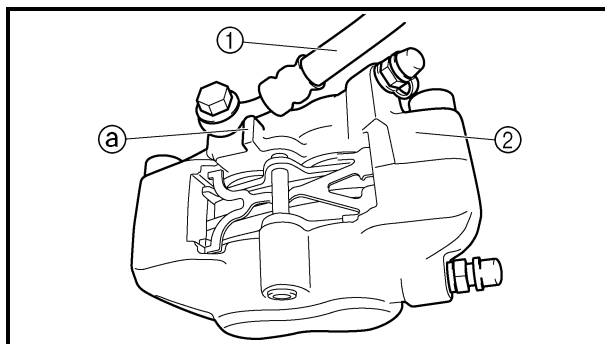
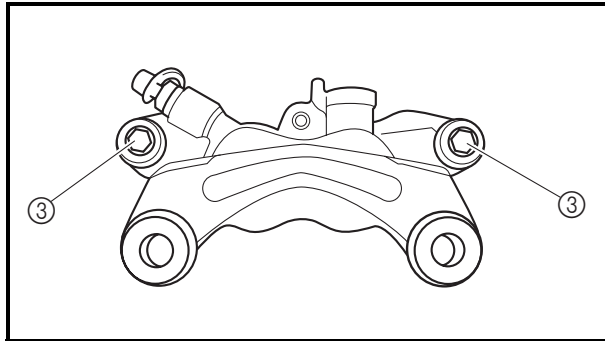
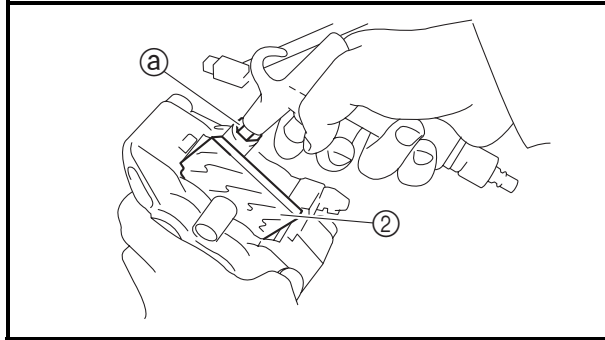
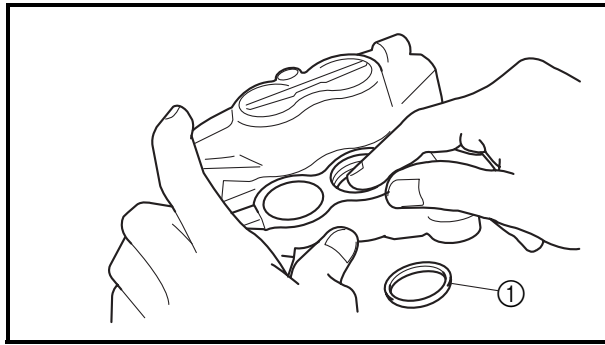
Refer to “AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)” in CHAPTER 2.



Order	Job name/Part name	Q'ty	Remarks
	Brake caliper and parking brake removal		Remove the parts in the order listed below.
	Brake fluid		Drain.
1	Brake hose	1	
2	Brake caliper assembly	1	
3	Parking brake cable	1	
4	Spring	1	
5	Parking brake assembly	1	
6	Collar	2	For installation, reverse the removal procedure.



Order	Job name/Part name	Q'ty	Remarks
	Brake caliper disassembly		Remove the parts in the order listed below.
①	Cap bolt	1	
②	Retaining pin	1	
③	Pad spring	1	
④	Brake pad	2	
⑤	Brake caliper piston	4	
⑥	Brake caliper piston seal	8	
⑦	Bleed screw	2	
			For assembly, reverse the disassembly procedure.



BRAKE CALIPER DISASSEMBLY

NOTE:

Before disassembling a caliper, drain brake fluid from brake hose, master cylinder, brake caliper and brake reservoir of their brake fluid.

1. Remove:

- Pistons
- Piston seals ①

Removal steps:

- Using a wood of piece ②, lock the right piston.
- Blow compressed air into the hose joint opening ② to force out the left piston from the caliper body.
- Remove the piston seals and reinstall the piston.
- Repeat the previous steps to force out the right piston from the caliper body.

⚠ WARNING

- Never try to pry out the pistons.
- Do not loosen the retaining pins ③.

BRAKE CALIPER INSTALLATION

1. Install:

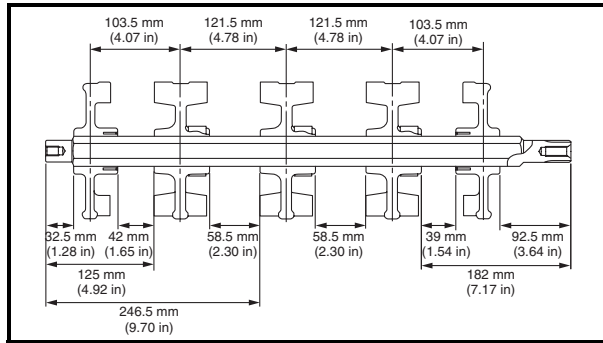
- Brake hose ①

CAUTION:

When installing the brake hose ① onto the brake caliper ②, make sure that the brake pipe touches the projection ② on the brake caliper.



Union bolt (brake hose):
30 Nm (3.0 m · kg, 22 ft · lb)



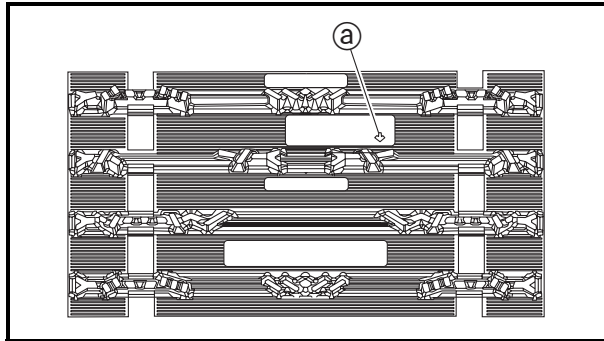
FRONT AXLE AND TRACK INSTALLATION

1. Install:

- Sprocket wheels
- Guide wheels

NOTE:

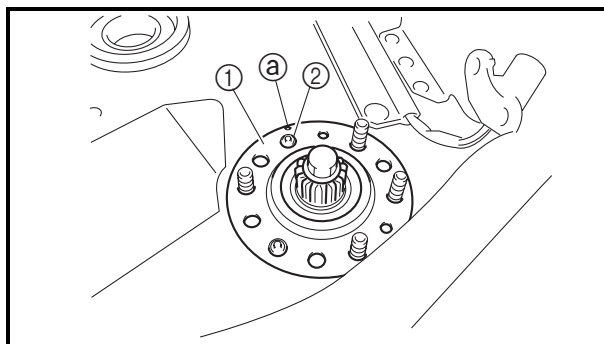
- When pressing the sprocket wheels onto the front axle, align the lugs on each sprocket wheel.
- Position each sprocket wheel on the axle as shown in the illustration.



2. Place the track in the chassis.

NOTE:

For track with a direction of rotation mark (a):
Install the track with the mark pointing in the direction of track rotation.



3. Install:

- Bearing holder ①

NOTE:

Align the punch mark (a) on the bearing holder ① with the rivet ②.



ENGINE

CAMSHAFTS
INSTALLATION

1. Install:

- Exhaust camshaft sprocket ①
- Intake camshaft sprocket ②
- (with the special tool ③)



Rotor holding tool:
90890-01235, YU-01235

- Camshaft sprocket bolts



Camshaft sprocket bolt:
24 Nm (2.4 m · kg, 17 ft · lb)

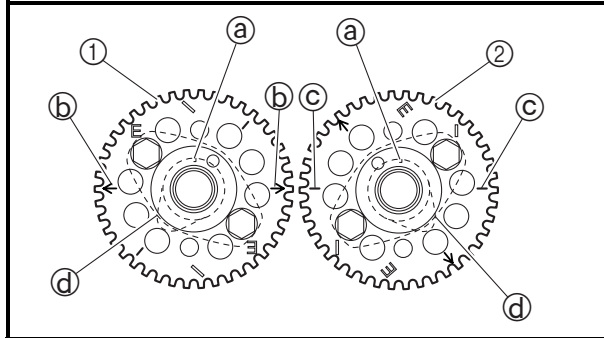
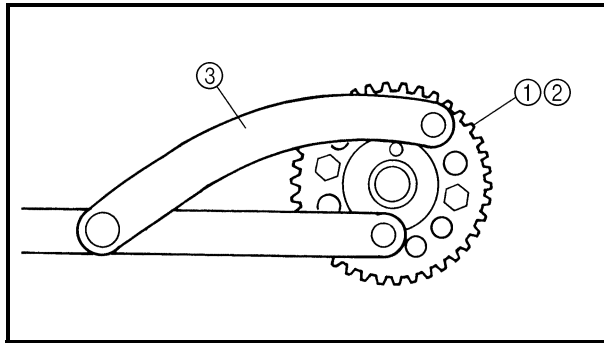
NOTE:

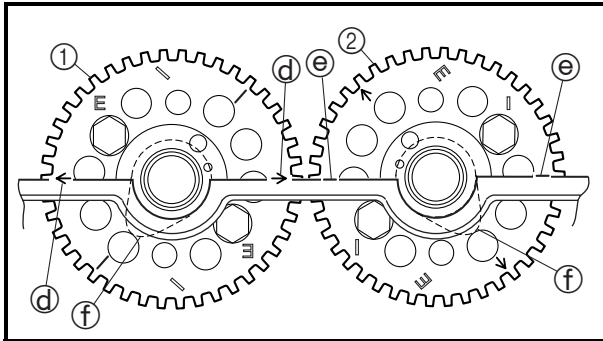
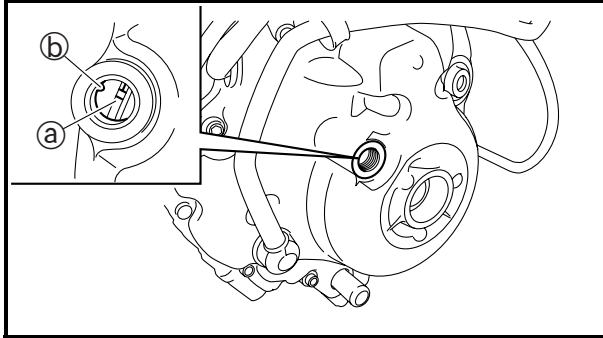
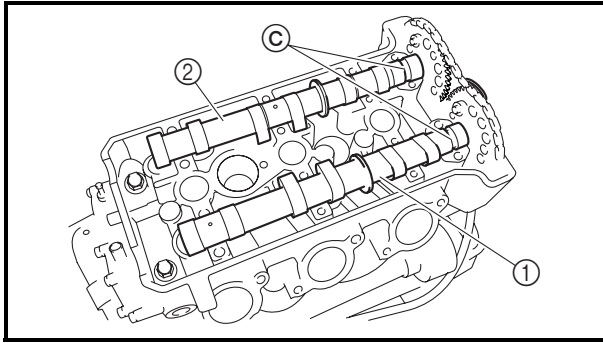
Make sure that the holes ① in the cylinder #3 cam and marks ② and ③ on the camshaft sprockets are in the position shown in the illustration.

②: Exhaust side “→”

③: Intake side “—”

①: Cylinder #3 - cam





2. Install:

- Exhaust camshaft ①
- Intake camshaft ②
(with the camshaft sprockets)

Installation steps:

- Turn the crankshaft clockwise.
- When piston #3 is at TDC on the compression stroke, align the "I" mark ① on the A.C. magneto rotor with the stationary pointer ② on the A.C. magneto cover.
- Install the timing chain onto both camshaft sprockets, and then install the camshafts.

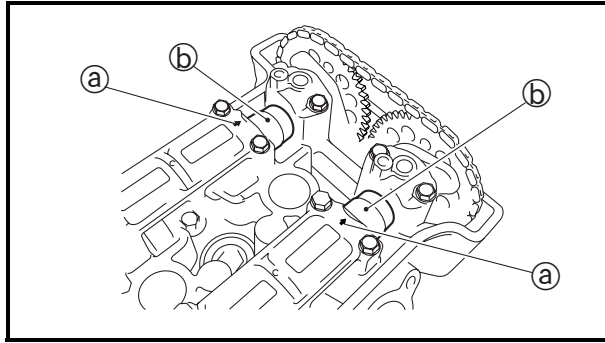
NOTE:

- Install the camshafts with the hole ③ in the cylinder #3 - cam facing up.
- When installing the timing chain, start with the exhaust camshaft and be sure to keep the timing chain as tight as possible on the exhaust side.
- Make sure the marks ④ and ⑤ on the timing chain sprockets are parallel with the edge of the cylinder head.

④: Exhaust side "→"

⑤: Intake side "—"

⑥: Cylinder #3 - cam



3. Install:

- Dowel pins
- Intake camshaft caps
- Exhaust camshaft caps

NOTE:

- The “I” mark refers to the intake camshaft caps and the “E” mark refers to the exhaust camshaft cap.
- Install the camshaft caps with the arrow mark (a) pointing towards the right side of the engine.
- Make sure the punch marks (b) in the camshaft are aligned with the arrow mark (a) on the camshaft caps.

4. Install:

- Camshaft cap bolts



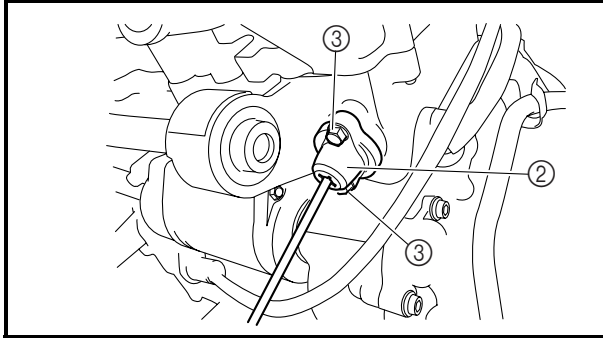
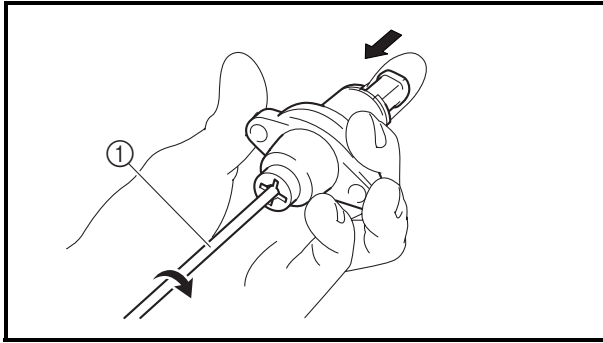
Camshaft cap bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

NOTE:

Tighten the camshaft cap bolts in stages and in a crisscross pattern, working from the inner caps out.

CAUTION:

- Lubricate the camshaft cap bolts with the engine oil.
- The camshaft cap bolts must be tightened evenly or damage to the cylinder head, camshaft caps, and camshafts will result.
- Do not turn the crankshaft when installing the camshaft to avoid damage or improper valve timing.



5. Install:

- Timing chain tensioner

Installation steps:

- While lightly pressing the timing chain tensioner rod by hand, turn the tensioner rod fully clockwise with a thin screwdriver ①.

NOTE:

Make sure that the tensioner rod has been fully set clockwise.

- With the timing chain tensioner rod turned all the way into the timing chain tensioner housing (with the thin screwdriver still installed), install the gasket and the timing chain tensioner ② onto the cylinder block.

⚠ WARNING

Always use a new gasket.

- Tighten the timing chain tensioner bolts ③ to the specified torque.

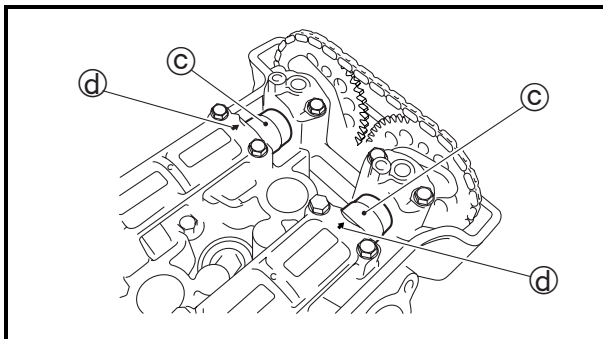
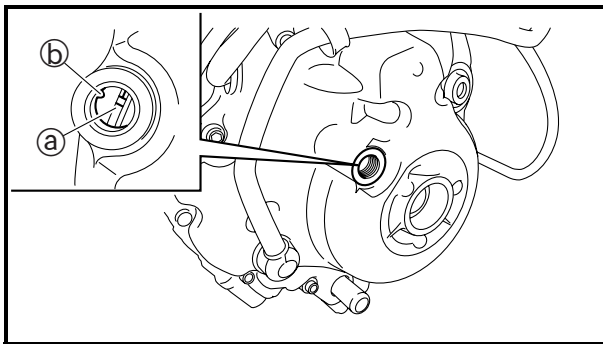


Timing chain tensioner bolt:
10 Nm (1.0 m · kg, 7.2 ft · lb)

- Remove the screwdriver, make sure the timing chain tensioner rod releases, and then tighten the cap bolt to the specified torque.



Cap bolt:
7 Nm (0.7 m · kg, 5.1 ft · lb)



6. Turn:

- Crankshaft
(several turns clockwise)

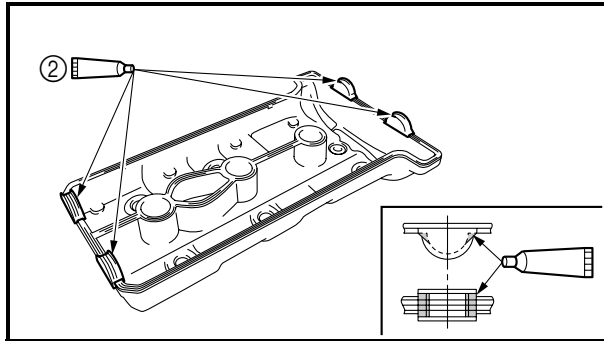
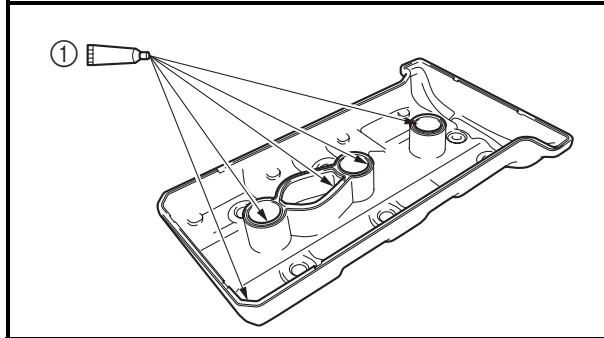
7. Inspect:

- "I" mark (a)
Make sure the "I" mark (a) on the A.C. magneto rotor is aligned with the stationary pointer (b) on the A.C. magneto cover.
- Camshaft punch marks (c)
Make sure the punch marks (c) in the cylinder #3 - cam are aligned with the arrow marks (d) on the camshaft caps.
Out of alignment → Adjust.
Refer to the installation steps above.



8. Measure:

- Valve clearance
- Out of specification → Adjust.



9. Install

- Cylinder head cover gasket **New**
- Cylinder head cover



Cylinder head cover bolt:
12 Nm (1.2 m · kg, 8.7 ft · lb)

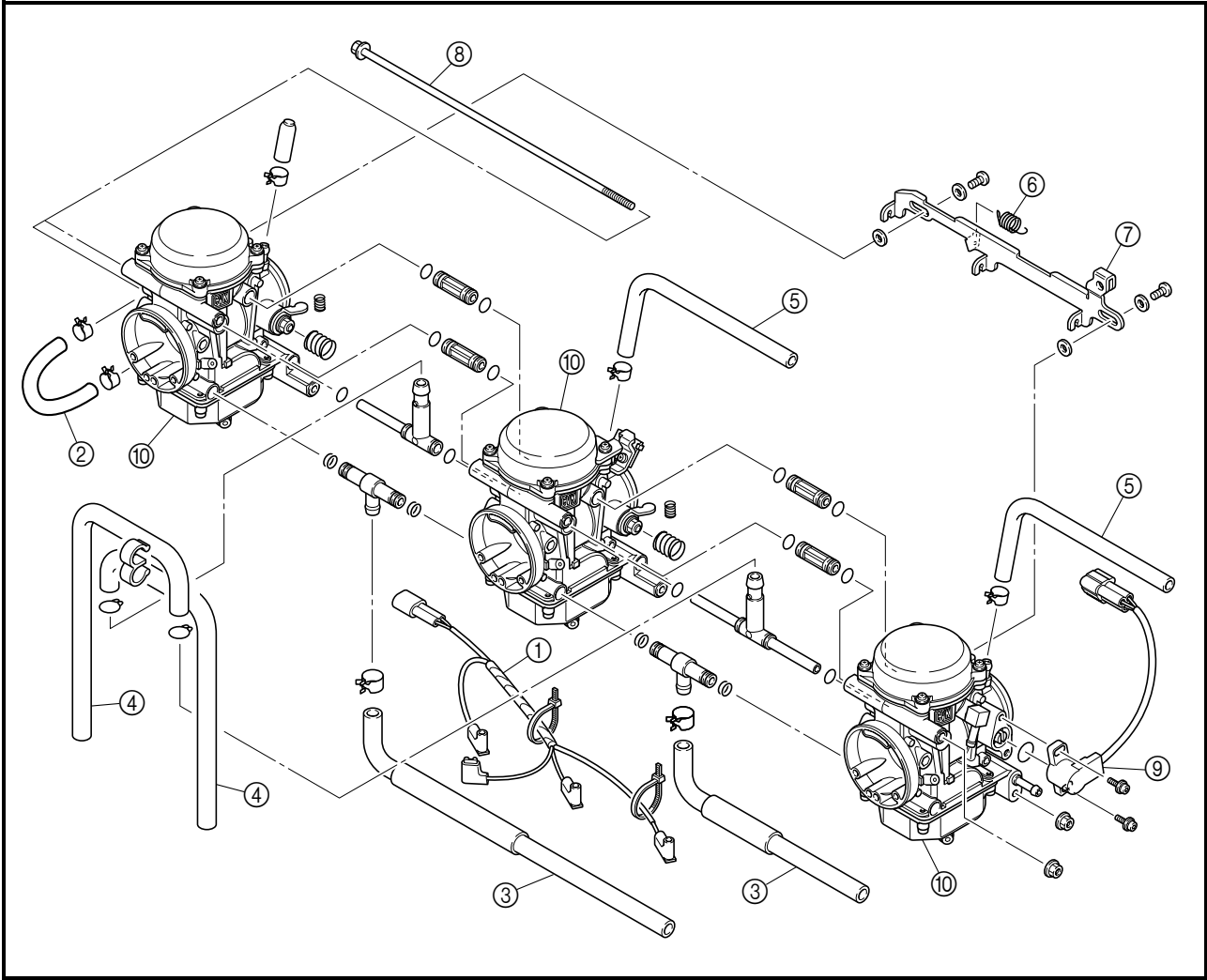
NOTE:

- Apply bond TB1541 ① onto the mating surfaces of the cylinder head cover and cylinder head cover gasket.
- Apply Sealant (Quick Gasket®) or Yamaha bond No. 1215 ② onto the mating surfaces of the cylinder head cover gasket and cylinder head.
- Tighten the cylinder head cover bolts stages and in a crisscross pattern.



CARBURETION

CARBURETORS



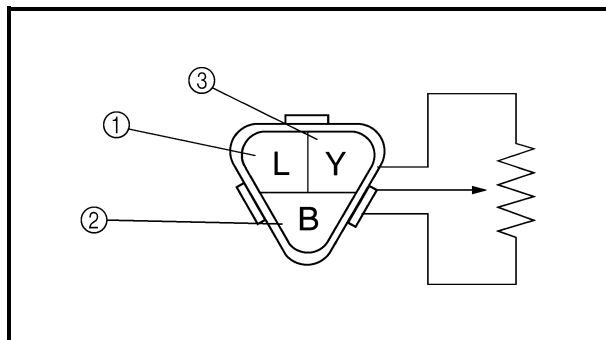
Order	Job name/Part name	Q'ty	Remarks
	Carburetor separation		Remove the parts in the order listed below.
①	Sub-wire harness 3	1	
②	Carburetor heating hose	1	
③	Fuel delivery hose	2	
④	Float chamber air vent hose	2	
⑤	Vacuum hose	2	
⑥	Spring	1	
⑦	Starter plunger link	1	
⑧	Connecting bolt	2	
⑨	Throttle position sensor	1	
⑩	Carburetor	3	
			For installation, reverse the removal procedure.



THROTTLE POSITION SENSOR (T.P.S.) INSPECTION AND ADJUSTMENT

NOTE:

Before adjusting the throttle position sensor, properly adjust the idle speed.



1. Inspect:

- Throttle position sensor

Inspection steps:

- Disconnect the throttle position sensor coupler.
- Connect the pocket tester ($\Omega \times 1k$) to the throttle position sensor coupler.

Positive tester probe → **Blue** ①

Negative tester probe → **Black** ②

- Check the throttle position sensor resistance.



Throttle position sensor resistance

“R₁”:

4 ~ 6 k Ω at 20 °C (68 °F)
(Blue – Black)

Out of specification → Replace the throttle position sensor.

- Connect the pocket tester ($\Omega \times 1k$) to the throttle position sensor coupler.

Positive tester probe → **Yellow** ③

Negative tester probe → **Black** ②

- While slowly pushing the throttle check the throttle position sensor resistance.



Throttle position sensor resistance

“R₂”:

0 ~ 4 k Ω at 20 °C (68 °F)
(Yellow – Black)

Out of specification → Replace the throttle position sensor.



2. Adjust:

- Throttle position sensor angle

Adjustment steps:

- Disconnect the throttle position sensor coupler.
- Connect the test coupler to the throttle position sensor.
- Connect three dry cells (1.5 V × 3 pcs.) in series to the test coupler.

Dry cells negative end → ①

Dry cells positive end → ②

- Connect the digital multi meter to the test coupler.

Digital multi meter negative lead → ①

Digital multi meter positive lead → ③

- Measure the voltage ④.

NOTE:

When measuring the voltage ④ be sure that the test coupler is connected to the throttle position sensor.

- Calculate the specified voltage ⑤.

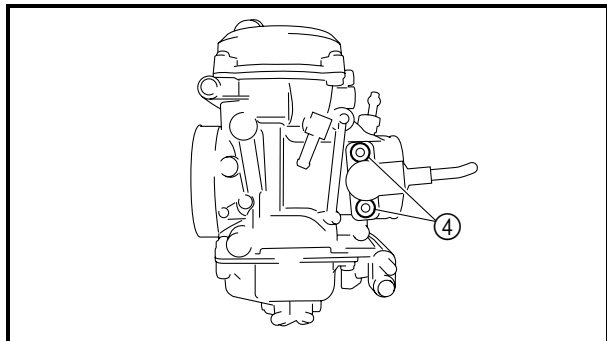
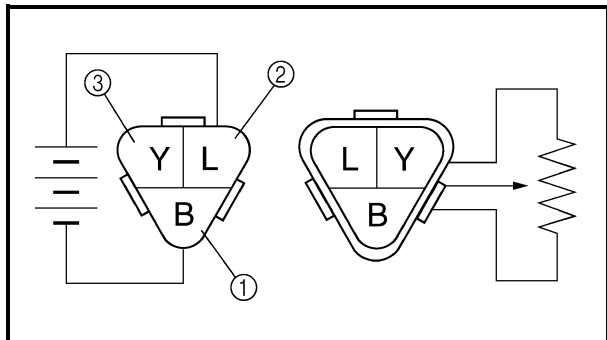
Specified voltage ⑤ = Voltage ④ × (0.136)

- Loosen the throttle position sensor bolt ④.
- Connect the digital multi meter to the test coupler.

Digital multi meter negative lead → ①

Digital multi meter positive lead → ③

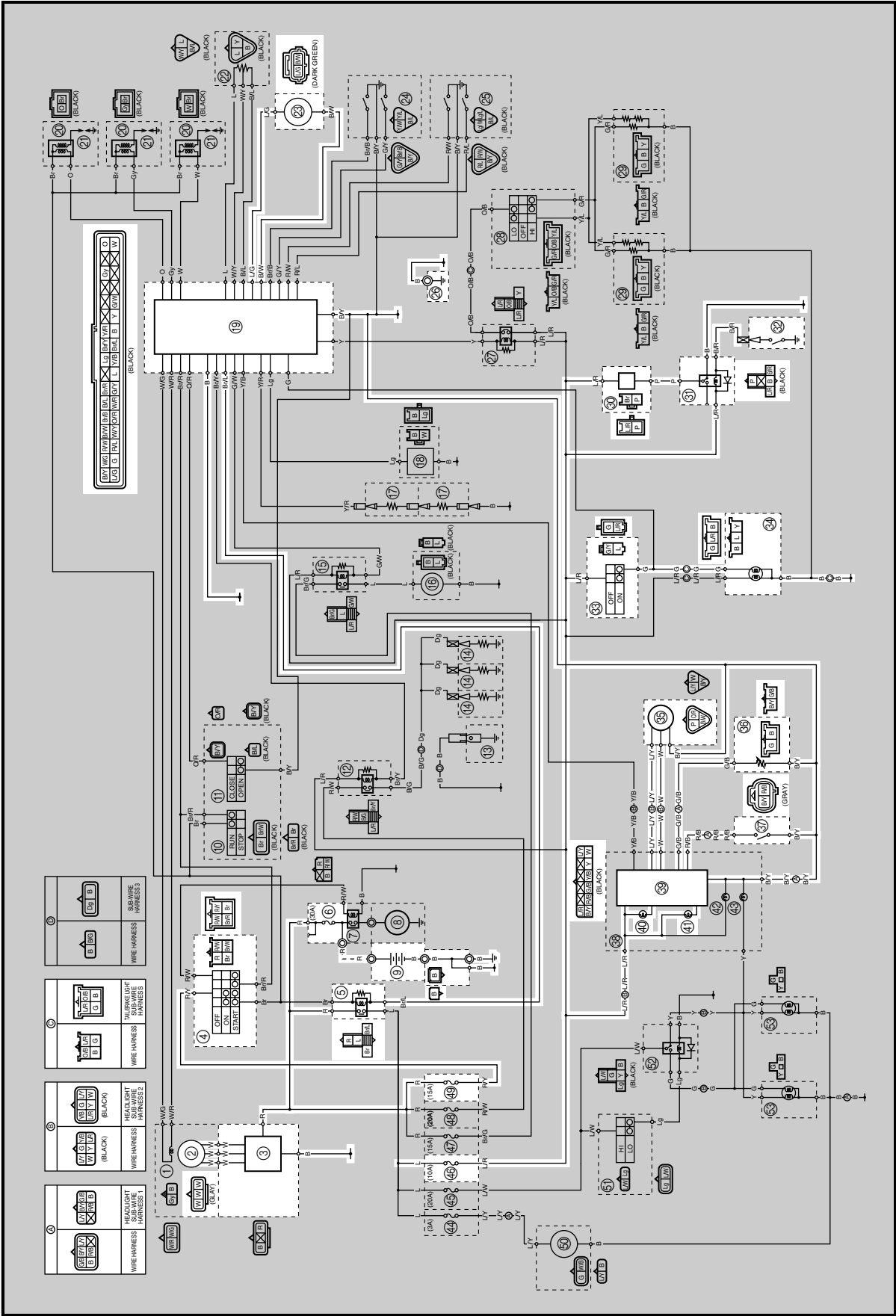
- Adjust the throttle position sensor position to obtain the specified voltage ⑤.
- Tighten the throttle position sensor bolt ④.
- Disconnect the test coupler and connect the throttle position sensor coupler.

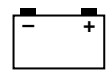




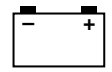
ELECTRICAL

SIGNAL SYSTEM
CIRCUIT DIAGRAM



**SIGNAL SYSTEM****CIRCUIT DIAGRAM**

- ② A.C. magneto
- ③ Rectifier/regulator
- ④ Main switch
- ⑤ Load control relay
- ⑥ Main fuse
- ⑨ Battery
- ⑱ Ignitor unit
- ⑳ Coolant temperature sensor
- ㉔ Frame ground
- ㉔ DC back buzzer
- ㉔ Gear position switch relay
- ㉔ Gear position switch
- ㉔ Brake light switch
- ㉔ Tail/brake light
- ㉔ Speed sensor
- ㉔ Fuel sender
- ㉔ Oil level switch
- ㉔ Multi-function meter
- ㉔ Warning light
- ㉔ Low coolant temperature indicator light
- ㉔ Signal fuse
- ㉔ Ignition fuse



TROUBLESHOOTING

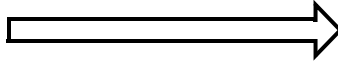
BACK BUZZER DOES NOT SOUND.

Check the signal fuse.



OK

FAULTY



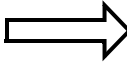
Replace the signal fuse.

Check the battery.



OK

OUT OF SPECIFICATION



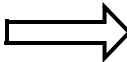
Replace and/or charge the battery.

Check the stator coil.



OK

OUT OF SPECIFICATION



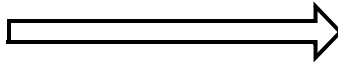
Replace the stator coil assembly.

Check the main switch.



OK

FAULTY



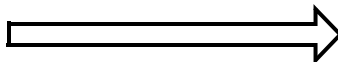
Replace the main switch.

Check the gear position switch.



OK

FAULTY



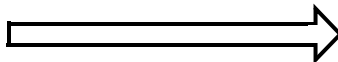
Replace the gear position switch.

Check the gear position switch relay.



OK

FAULTY



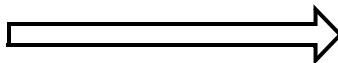
Replace the gear position switch relay.

Check the load control relay.



OK

FAULTY



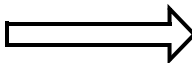
Replace the load control relay.

Check the DC back buzzer.



OK

DOES NOT SOUND



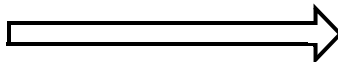
Replace the DC back buzzer.

Check the signal system's wiring.



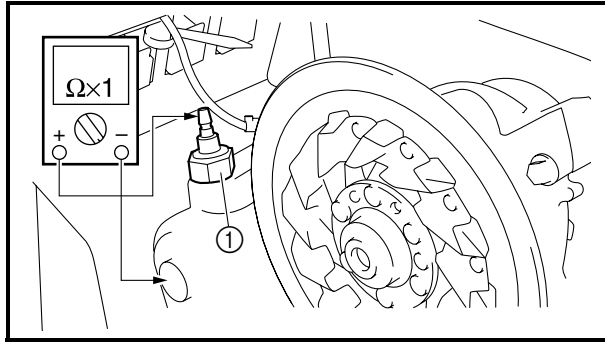
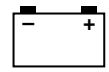
OK

FAULTY



Properly connect or repair the signal system's wiring.

Correct the connection and/or replace the rectifier/
regulator and/or ignitor unit.

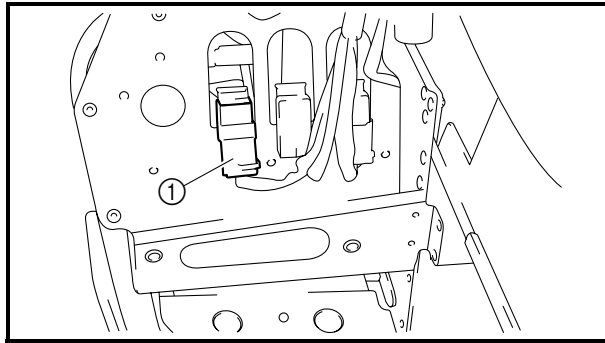


GEAR POSITION SWITCH

1. Check:

- Gear position switch ① continuity
Faulty → Replace.

Shift lever position	Continuity
DRIVE (D) or LOW (L)	Yes
REVERSE	No



GEAR POSITION SWITCH RELAY

1. Inspect:

- Gear position switch relay ①

Inspection steps:

- Disconnect the gear position switch relay from the coupler.
- Connect the pocket tester ($\Omega \times 1$) and battery (12 V) to the gear position switch relay terminals as shown.

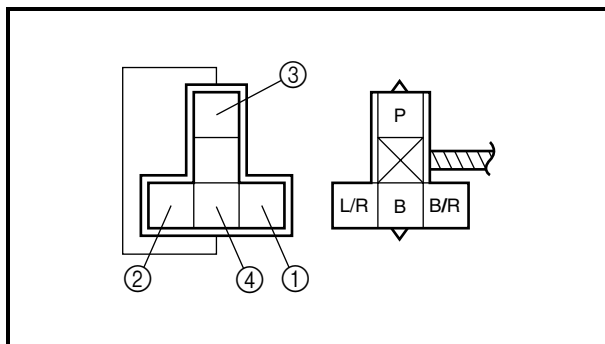
Positive battery terminal → Blue/Red ①

Negative battery terminal → Black/Red ②

Positive tester probe → Pink ③

Negative tester probe → Black ④

- If gear position switch relay does not have continuity between the pink and black terminals, replace it.





SPECIFICATIONS

GENERAL SPECIFICATIONS

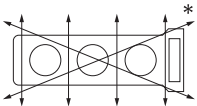
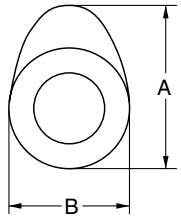
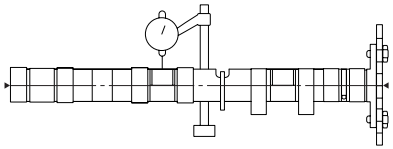
Model	VK10W
Model code number:	8GS1 (USA/Canada) 8GS2 (Europe)
Dimensions:	
Overall length	3,270 mm (128.7 in)
Overall width	1,200 mm (47.2 in)
Overall height	1,380 mm (54.3 in)
Weight:	
Dry weight	360 kg (794 lb)
Minimum turning radius:	
Clockwise	4.7 m (15.4 ft)
Counterclockwise	4.7 m (15.4 ft)
Engine:	
Engine type	Liquid-cooled, 4-stroke, DOHC
Cylinder type	Backward-inclined parallel 3-cylinder
Displacement	973 cm ³ (59.37 cu.in)
Bore × stroke	79.0 × 66.2 mm (3.11 × 2.61 in)
Compression ratio	11.3 : 1
Maximum hose power r/min	84.7 kw (115.2 PS)/8,500 r/min
Maximum torque r/min	101.6 Nm (10.4 kgf)/7,000 r/min
Vacuum pressure at engine idling speed	24.0 kPa (0.24 kg/cm ² , 3.41 psi)
Standard compression pressure (at sea level)	1,450 kPa (14.5 kg/cm ² , 206 psi) at 400 r/min
Starting system	Electric starter
Lubrication system:	Dry sump
Engine oil:	
Type	API SE, SF, SG or higher SAE 0W-30
Oil capacity	
Periodic oil change	2.8 L (2.5 Imp qt, 3.0 US qt)
With oil filter replacement	3.0 L (2.6 Imp qt, 3.2 US qt)
Total amount	3.7 L (3.3 Imp qt, 3.9 US qt)
Oil filter:	
Oil filter type	Cartridge (paper)
Drive chain housing oil:	
Type	Gear oil "GL-3" 75W or 80W
Capacity	0.35 L (0.31 Imp qt, 0.37 US qt)
Coolant:	
Filler cap opening pressure	93.3 ~ 122.7 kPa (0.93 ~ 1.23 kg/cm ² , 13.2 ~ 17.5 psi)
Capacity	4.7 L (4.14 Imp qt, 4.97 US qt)
Fuel:	
Type	Regular unleaded gasoline
	Pump Octane $\frac{R + M}{2}$; 86 or higher (For USA/Canada)
	Research Octane; 91 or higher (For Europe)
Tank capacity	42 L (9.24 Imp gal, 11.10 US gal)
Carburetors:	
Type/Quantity	CVK40/3
Manufacture	KEIHIN



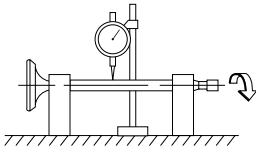
Model	VK10W
Spark plug: Type Manufacture Gap	NGK R CR8E NGK 0.7 ~ 0.8 mm (0.028 ~ 0.031 in)
Transmission: Primary reduction system Primary reduction ratio Clutch type Secondary reduction system Secondary reduction ratio Reverse system	V-Belt 3.8 ~ 1 : 1 Automatic centrifugal engagement Chain 1.95 (39/20) Yes
Chassis: Frame type Caster Ski stance (center to center)	Monocoque 23.0° 1,020 mm (40.2 in)
Suspension: Front suspension type Rear suspension type	Double wishbone Slide rail suspension
Track: Track type Track width Length on ground Track deflection mm/100 N (10 kg, 22 lb)	Internal drive type 500 mm (19.69 in) 1,204 mm (47.40 in) 35 ~ 45 mm (1.38 ~ 1.78 in)
Brake: Brake type Operation method	Caliper type disc brake Handlebar, left hand operated
Electrical: Ignition system Generator system	Transistorized coil ignition A.C. magneto
Headlight bulb type:	Halogen bulb
Bulb wattage × Quantity: Headlight Tail/Brake light Meter light High beam indicator light Information indicator light Low coolant temperature light	12 V, 60 W/55 W × 2 12 V, 5 W/21 W 14 V, 50 mA × 6 14 V, 80 mA 14 V, 80 mA 14 V, 80 mA



MAINTENANCE SPECIFICATIONS ENGINE

Model	VK10W
<p>Cylinder head:</p> <p>Volume (with spark plug)</p> <p><Warpage limit></p> 	<p>22.82 ~ 23.62 cm³ (1.39 ~ 1.44 cu.in)</p> <p>0.10 mm (0.0039 in)</p> <p>* Lines indicate straight edge measurement.</p>
<p>Cylinder:</p> <p>Material</p> <p>Bore size</p> <p><Taper limit></p> <p><Out of round></p>	<p>Aluminum alloy with dispersion coating</p> <p>79.000 ~ 79.010 mm (3.1102 ~ 3.1106 in)</p> <p>0.050 mm (0.0020 in)</p> <p>0.050 mm (0.0020 in)</p>
<p>Camshaft:</p> <p>Drive system</p> <p>Camshaft cap inside diameter</p> <p>Camshaft journal diameter</p> <p>Camshaft-journal-to-camshaft-cap clearance</p> <p>Camshaft dimensions</p> <p>Intake "A"</p> <p><Limit></p> <p>"B"</p> <p><Limit></p> <p>Exhaust "A"</p> <p><Limit></p> <p>"B"</p> <p><Limit></p> <p>Camshaft runout</p>  	<p>Chain drive (right)</p> <p>24.500 ~ 24.521 mm (0.9646 ~ 0.9654 in)</p> <p>24.459 ~ 24.472 mm (0.9630 ~ 0.9635 in)</p> <p>0.028 ~ 0.062 mm (0.0011 ~ 0.0024 in)</p> <p>33.75 ~ 33.85 mm (1.3287 ~ 1.3327 in)</p> <p>33.65 mm (1.3248 in)</p> <p>24.95 ~ 25.05 mm (0.9823 ~ 0.9862 in)</p> <p>24.85 mm (0.9783 in)</p> <p>33.75 ~ 33.85 mm (1.3287 ~ 1.3327 in)</p> <p>33.65 mm (1.3248 in)</p> <p>24.95 ~ 25.05 mm (0.9823 ~ 0.9862 in)</p> <p>24.85 mm (0.9783 in)</p> <p>0.03 mm (0.0012 in)</p>
<p>Timing chain:</p> <p>Model/Number of links</p> <p>Tensioning system</p>	<p>98XTRH2005/140</p> <p>Automatic</p>

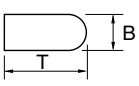
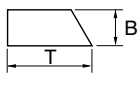
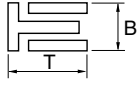
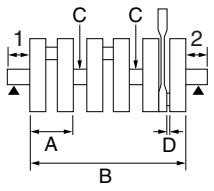


Model	VK10W
Valves, valve seats, valve guides:	
Valve clearance (cold)	
Intake	0.15 ~ 0.22 mm (0.0059 ~ 0.0087 in)
Exhaust	0.21 ~ 0.25 mm (0.0083 ~ 0.0098 in)
Valve dimensions	
Valve head diameter A	
Intake	29.9 ~ 30.1 mm (1.1771 ~ 1.1850 in)
Exhaust	25.9 ~ 26.1 mm (1.0197 ~ 1.0276 in)
Valve face width B	
Intake	1.90 ~ 2.62 mm (0.0748 ~ 0.1031 in)
Exhaust	1.90 ~ 2.62 mm (0.0748 ~ 0.1031 in)
Valve seat width C	
Intake	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
Exhaust	0.9 ~ 1.1 mm (0.035 ~ 0.043 in)
Valve margin thickness D	
Intake	0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)
Exhaust	0.5 ~ 0.9 mm (0.0197 ~ 0.0354 in)
Valve stem diameter	
Intake	4.975 ~ 4.990 mm (0.1959 ~ 0.1965 in)
<Limit>	4.945 mm (0.1947 in)
Exhaust	4.965 ~ 4.980 mm (0.1955 ~ 0.1961 in)
<Limit>	4.935 mm (0.1943 in)
Valve guide inside diameter	
Intake	5.000 ~ 5.012 mm (0.1969 ~ 0.1973 in)
<Limit>	5.05 mm (0.199 in)
Exhaust	5.000 ~ 5.012 mm (0.1969 ~ 0.1973 in)
<Limit>	5.05 mm (0.199 in)
Valve-stem-to-valve-guide clearance	
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)
<Limit>	0.08 mm (0.0031 in)
Exhaust	0.020 ~ 0.047 mm (0.0008 ~ 0.0019 in)
<Limit>	0.10 mm (0.0039 in)
Valve stem runout limit	0.01 mm (0.0004 in)
	
Valve seat width	
Intake	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
<Limit>	1.6 mm (0.0630 in)
Exhaust	0.9 ~ 1.1 mm (0.0354 ~ 0.0433 in)
<Limit>	1.6 mm (0.0630 in)



Model	VK10W
<p>Valve spring:</p> <p>Free length</p> <p>Intake</p> <p><Limit></p> <p>Exhaust</p> <p><Limit></p> <p>Installed length (valve closed)</p> <p>Intake</p> <p>Exhaust</p> <p>Compressed spring force (installed)</p> <p>Intake</p> <p>Exhaust</p> <p>Spring tilt*</p> <p>Intake</p> <p>Exhaust</p> <p>Winding direction (top view)</p> <p>Intake</p> <p>Exhaust</p>	<p>39.73 mm (1.56 in)</p> <p>37.74 mm (1.48 in)</p> <p>39.73 mm (1.56 in)</p> <p>37.74 mm (1.48 in)</p> <p>33.0 mm (1.30 in)</p> <p>33.0 mm (1.30 in)</p> <p>136 ~ 158 N (13.9 ~ 16.1 kg, 30.6 ~ 35.5 lb)</p> <p>136 ~ 158 N (13.9 ~ 16.1 kg, 30.6 ~ 35.5 lb)</p> <p>2.5°/1.7 mm (0.07 in)</p> <p>2.5°/1.7 mm (0.07 in)</p> <p>Clockwise</p> <p>Clockwise</p>
<p>Valve lifter:</p> <p>Valve lifter outside diameter</p> <p>Intake</p> <p><Limit></p> <p>Exhaust</p> <p><Limit></p> <p>Valve lifter hole inside diameter</p> <p>Intake</p> <p><Limit></p> <p>Exhaust</p> <p><Limit></p>	<p>24.482 ~ 24.488 mm (0.9639 ~ 0.9641 in)</p> <p>24.457 mm (0.9629 in)</p> <p>24.482 ~ 24.488 mm (0.9639 ~ 0.9641 in)</p> <p>24.457 mm (0.9629 in)</p> <p>24.500 ~ 24.518 mm (0.9646 ~ 0.9653 in)</p> <p>24.548 mm (0.9665 in)</p> <p>24.500 ~ 24.518 mm (0.9646 ~ 0.9653 in)</p> <p>24.548 mm (0.9665 in)</p>
<p>Piston:</p> <p>Piston size (D)</p> <p>Measuring point (H)</p> <p>Piston to-cylinder clearance</p> <p><Limit></p> <p>Piston pin bore off set</p> <p>Off-set direction</p> <p>Piston pin bore inside diameter</p> <p><Limit></p>	<p>78.935 ~ 78.950 mm (3.1077 ~ 3.1083 in)</p> <p>5.0 mm (0.20 in)</p> <p>0.050 ~ 0.075 mm (0.0020 ~ 0.0030 in)</p> <p>0.120 mm (0.0047 in)</p> <p>0.5 mm (0.0197 in)</p> <p>Exhaust side</p> <p>19.004 ~ 19.015 mm (0.7482 ~ 0.7486 in)</p> <p>19.045 mm (0.7498 in)</p>
<p>Piston pin:</p> <p>Piston pin outside diameter</p> <p><Limit></p> <p>Piston pin length</p> <p>Piston pin to piston pin bore clearance</p> <p><Limit></p>	<p>18.991 ~ 19.000 mm (0.7477 ~ 0.7480 in)</p> <p>18.971 mm (0.7469 in)</p> <p>52.9 ~ 53.0 mm (2.083 ~ 2.087 in)</p> <p>0.004 ~ 0.024 mm (0.0002 ~ 0.0009 in)</p> <p>0.074 mm (0.0029 in)</p>




Model	VK10W
Piston ring: Sectional sketch Top ring Ring type Dimensions (B × T) 2nd ring Ring type Dimensions (B × T) Oil ring Dimensions (B × T) End gap (installed) Top ring 2nd ring Oil ring Side clearance (installed) Top ring 2nd ring Oil ring Plating/coating Top ring 2nd ring	 Barrel 1.00 × 2.80 mm (0.039 × 0.110 in)  Taper 1.00 × 2.90 mm (0.039 × 0.114 in)  2.00 × 2.50 mm (0.079 × 0.098 in) 0.35 ~ 0.45 mm (0.014 ~ 0.018 in) 0.75 ~ 0.85 mm (0.030 ~ 0.033 in) 0.20 ~ 0.60 mm (0.008 ~ 0.024 in) 0.030 ~ 0.070 mm (0.0012 ~ 0.0028 in) 0.020 ~ 0.060 mm (0.0008 ~ 0.0024 in) 0.060 ~ 0.150 mm (0.0024 ~ 0.0059 in) Chrome plated/parkerizing Parkerizing
Connecting rod: Small end diameter Big end diameter Crankshaft-pin-to-big-end-bearing clearance Bearing color code	19.005 ~ 19.018 mm (0.7482 ~ 0.7487 in) 41.000 ~ 41.018 mm (1.6142 ~ 1.6149 in) 0.033 ~ 0.050 mm (0.0013 ~ 0.0020 in) 0 = White-White 1 = Blue-Blue 2 = Black-Black 3 = Brown-Brown 4 = Green-Green 5 = Yellow-Yellow
Crank pin: Crank pin outside diameter	37.976 ~ 38.000 mm (1.4951 ~ 1.4961 in)
Crankshaft:  Measuring point 1 Measuring point 2 Width A Width B Crankshaft runout C Big end side clearance D Crankshaft-journal-to-crankshaft-journal-bearing clearance Bearing color code	62.0 mm (2.44 in) 100.0 mm (3.94 in) 62.25 ~ 62.65 mm (2.451 ~ 2.467 in) 234.65 ~ 235.65 mm (9.24 ~ 9.28 in) 0.03 mm (0.0012 in) 0.160 ~ 0.262 mm (0.0063 ~ 0.0103 in) 0.027 ~ 0.045 mm (0.0011 ~ 0.0018 in) 2 = Black 3 = Brown 4 = Green 5 = Yellow 6 = Pink 7 = Red 8 = White



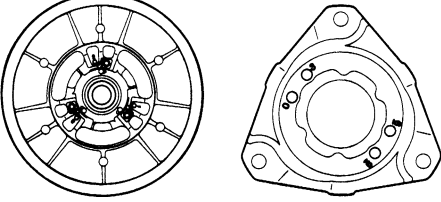
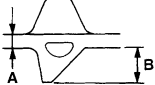

Model	VK10W
Carburetor:	
Type/Quantity	CVK40/3
Manufacturer	KEIHIN
I.D. mark	8ES1 02
Main jet (M.J)	#148
Main air jet (M.A.J)	#70
Jet needle (J.N)	N425-BSJ00
Needle jet (N.J)	W9554-26538#6
Pilot jet (P.J)	#45
Pilot air jet (P.A.J)	#120
Pilot outlet (P.O)	0.9
Bypass 1 (B.P.1)	0.8
(B.P.2)	0.8
(B.P.3)	0.8
(B.P.4)	0.8
(B.P.5)	0.8
Throttle valve (Th.V)	1020-B70-80 ($\theta = 10^\circ$)
Valve seat size (V.S)	1.2
Starter jet (G.S)	#70
Float height (F.H)	16 mm (0.630 in)
Fuel level (below the line on the float chamber)	0.2 ~ 2.2 mm (0.008 ~ 0.087 in)
Throttle cable free play	2.0 ~ 3.0 mm (0.08 ~ 0.12 in)
Engine idle speed	1,300 ~ 1,500 r/min
Fuel pump:	
Type	Diaphragm
Manufacturer	8FA (MIKUNI)
Oil filter:	
Oil filter type	Cartridge (paper)
Bypass valve opening pressure	78 ~ 118 kPa (0.78 ~ 1.18 kg/cm ² , 11.1 ~ 16.8 psi)
Oil pump:	
Oil pump type	Trochoidal
Inner-rotor-to-outer-rotor-tip clearance	0.09 ~ 0.15 mm (0.004 ~ 0.006 in)
Outer-rotor-to-oil-pump-housing clearance	0.03 ~ 0.08 mm (0.001 ~ 0.003 in)
Relief valve operating pressure	440 ~ 560 kPa (4.4 ~ 5.6 kg/cm ² , 62.6 ~ 79.6 psi)
Oil pressure (hot)	45 kPa (0.45 kg/cm ² , 6.40 psi) at 1,400 r/min
Cooling system:	
Filler cap opening pressure	93.3 ~ 122.7 kPa (0.93 ~ 1.23 kg/cm ² , 13.2 ~ 17.5 psi)
Thermostat opening temperature	80 ~ 84 °C (176 ~ 183 °F)
Valve lift	7.0 mm (0.28 in) at 95 °C (203 °F)
Water pump type	Single-suction centrifugal pump (Impeller type)
Reduction ratio	22/28 (0.786)
Coolant type	High quality silicate-free ethylene glycol antifreeze containing corrosion inhibitors
Coolant mixing ratio (coolant: water)	3 : 2 (60% : 40%)
Capacity	4.7 L (4.14 Imp qt, 4.97 US qt)
Max. impeller shaft tilt	0.15 mm (0.0059 in)
<Limit>	0.072 mm (0.0028 in)



POWER TRAIN

Model	VK10W
Transmission: Type Range of ratio Engagement speed r/min Shift r/min Sheave distance Sheave offset Secondary sheave free play (clearance) Secondary sheave clearance V-belt height (standard)	V-belt automatic 3.8 ~ 1.0 : 1 2,200 ~ 2,600 r/min 8,250 ~ 8,750 r/min 267 ~ 270 mm (10.51 ~ 10.63 in) 13.5 ~ 16.5 mm (0.53 ~ 0.65 in) 1.0 ~ 2.0 mm (0.04 ~ 0.08 in) 35.0 ~ 35.8 mm (1.38 ~ 1.41 in) −0.5 ~ 1.5 mm (−0.02 ~ 0.06 in)
V-belt: Part number/Manufacturer Circumference Width “A” Wear limit “B”	8GS-17641-00/MITSUBOSHI 1,132 ~ 1,138 mm (44.6 ~ 44.8 in) 34.1 mm (1.34 in) 32.1 mm (1.26 in)
	
Primary sheave spring: Part number Color code Diameter Wire diameter Preload Spring rate Number of coils Free length Set length	90501-550A3 White-Blue-White 59.5 mm (2.34 in) 5.5 mm (0.217 in) 196 N (20.0 kg, 44.1 lb) 22.1 N/mm (2.25 kg/mm, 126 lb/in) 4.56 82.3 mm (3.24 in) 73.4 mm (2.89 in)
Primary sheave weight arm: Part number (with bush) Weight (without bush and rivets)	8FN-17605-00 75.28 g (2.657 oz)
Rivet: Outer Part number Material Size Quantity Hole quantity Inner Part number Material Size Quantity Hole quantity None (outer and inner)	90261-06033 Steel 17.2 mm (0.677 in) 3 3 90269-06006 Steel 17.2 mm (0.677 in) 3 3 Nothing
Secondary sheave spring: Part number Color code Outside diameter Wire diameter	90508-60012 Pink 69.5 mm (2.736 in) 6.0 mm (0.236 in)



Model	VK10W
<p>Hole position Sheave side-spring side (twist angle)</p>  <p>Spring rate Number of coils Free length Torque cam angle</p>	<p>3-3 (60°)</p> <p>12.3 N/mm (1.25 kg/mm, 70.23 lb/in) 5.53 75 mm (2.95 in) 39°</p>
<p>Drive chain:</p> <p>Type Number of links Secondary reduction ratio Maximum 14 link drive chain section length <Limit></p>	<p>Borg Warner Automotive 23RH303-68ASM 68L 1.95 (39/20) 133.35 mm (5.25 in) 137.35 mm (5.41 in)</p>
<p>Track:</p> <p>Part number Width Length Pitch Number of links Thickness "A" Height "B"</p>  <p>Track deflection at 100 N (10 kg, 22 lb)</p>	<p>8FN-47110-00 500 mm (19.69 in) 3,969 mm (156.24 in) 64 mm (2.52 in) 42 5.1 mm (0.20 in) 31.8 mm (1.25 in)</p> <p>35 ~ 45 mm (1.38 ~ 1.77 in)</p>
<p>Slide rail suspension (rear suspension):</p> <p>Front travel Rear travel Suspension spring rate Front Rear Suspension wire diameter Front Rear</p>	<p>212 mm (8.3 in) 262 mm (10.31 in) 12.7 N/mm (1.29 kg/mm, 72.5 lb/in) 68.6 N/mm (7.00 kg/mm, 391.7 lb/in) 6.8 mm (0.268 in) 13.3 mm (0.524 in)</p>
<p>Suspension setting position:</p> <p>Hook setting length * (Standard) (Maximum) (Minimum) Full rate adjusting position **</p> 	<p>14.5 ~ 15.5 mm (0.571 ~ 0.610 in) 35 mm (1.37 in) 10 mm (0.40 in) A</p>



Model	VK10W
Shock absorber: Damping force	
Front	
Extension	540 N/0.3 m/s (55.1 kg/0.3 m/s, 121.4 lb/0.3 m/s)
Compression	1,130 N/0.3 m/s (115.2 kg/0.3 m/s, 254.0 lb/0.3 m/s)
Rear	
Extension	2,530 N/0.3 m/s (258.0 kg/0.3 m/s, 568.7 lb/0.3 m/s)
Compression	690 N/0.3 m/s (70.4 kg/0.3 m/s, 155.1 lb/0.3 m/s)
Slide runner:	
Thickness	17.8 mm (0.70 in)
Wear limit	10 mm (0.39 in)
Track sprocket wheel:	
Material	Ultra high molecular weight polyethylene
Number of teeth	8 T
Rear guide wheel:	
Material	High molecular weight polyethylene with rubber
Outside diameter	178 mm (7.01 in)
Brake:	
Recommended brake fluid	DOT 4
Pad thickness	10.2 mm (0.40 in)
Pad wear limit	4.7 mm (0.19 in)
Parking brake pad clearance	1.5 ~ 2.0 mm (0.059 ~ 0.079 in)
Parking brake cable distance	43.5 ~ 46.5 mm (1.713 ~ 1.831 in)
Disc outside diameter	200 mm (7.87 in)
Disc minimum thickness	3.5 mm (0.14 in)



CHASSIS

Model	VK10W
Frame:	
Frame material	Monocoque (Aluminum & Steel)
Seat height	716 mm (28.2 in)
Luggage box location	Under seat
Steering:	
Lock-to-lock angle (left)	29.7° (R ski) 34.4° (L ski)
(right)	34.4° (R ski) 29.7° (L ski)
Ski alignment	Toe-out
Toe-out size	0 ~ 15 mm (0 ~ 0.59 in)
Caster angle	23°
Ski stance (center to center)	1,020 mm (40.2 in)
Ski:	
Ski material	Plastic
Length	1,073 mm (42.24 in)
Width	180 mm (7.09 in)
Ski runner material	Steel
Ski cover	No
Ski runner wear limit	8 mm (0.31 in)
Plastic ski wear limit	25 mm (0.98 in)
Ski suspension (front suspension):	
Type	Independent wishbone
Travel	175.0 mm (6.89 in)
Spring type	Coil spring
Spring rate	42.2 N/mm (4.30 kg/mm, 24.0 lb/in)
Wire diameter	10.0 mm (0.394 in)
Shock absorber: Damping force	
Extension	1,010 N/0.3 m/s (103.0 kg/0.3 m/s, 227.0 lb/0.3 m/s)
Compression	460 N/0.3 m/s (46.9 kg/0.3 m/s, 103.4 lb/0.3 m/s)



ELECTRICAL

Model	VK10W
Voltage	12 V
Ignition system: Ignition timing (B.T.D.C.) Advanced type	5° at 1,400 r/min Digital type
Ignition coil: Model/Manufacturer Ignition spark gap Primary coil resistance Secondary coil resistance	F6T558/MITSUBISHI 6.0 mm (0.24 in) 1.19 ~ 1.61 Ω at 20 °C (68 °F) 8.5 ~ 11.5 k Ω at 20 °C (68 °F)
Charging system: Type Nominal output	A.C. magneto 14 V/less than 35 A at 5,000 r/min
DC-C.D.I.: Magneto model/Manufacturer Standard Pickup coil resistance (color code) Stator coil resistance (color code) Ignitor unit model/Manufacturer	F074T38571/MITSUBISHI 14 V 30 A, 420 W at 5,000 r/min 189 ~ 231 Ω at 20 °C (68 °F) (Gray – Black) 0.22 ~ 0.26 Ω at 20 °C (68 °F) (White – White) J4T16271/MITSUBISHI
Rectifier/regulator: Type Model/Manufacturer No load regulated voltage (DC) Capacity (DC) Withstand voltage	Short circuit type FH001/SHINDENGEN 14.1 ~ 14.9 V 35 A 40 V
Battery: Specific gravity Manufacturer Type Ten hour rate amperage	1.32 YUASA YTX20L-BS 12V-18Ah 18 A
Electric starter system: Type	Constant mesh type
Starter motor: Model/Manufacturer Output Armature coil resistance Continuity check Insulation check Brush Overall length <Wear limit> Spring pressure Commutator diameter <Wear limit> Mica undercut	8ES1/MORIC 12 V – 0.95 kW 0.008 ~ 0.010 Ω at 20 °C (68 °F) More than 100 k Ω at 20 °C (68 °F) 9.8 mm (0.39 in) 5.0 mm (0.20 in) 7.36 ~ 11.04 N (750 ~ 1,126 g, 26.5 ~ 39.7 oz) 28.5 mm (1.12 in) 27.5 mm (1.08 in) 1.5 mm (0.059 in)
Starter relay: Model/Manufacturer Amperage rating Coil resistance	MS5F-421/JIDECO 180 A 4.18 ~ 4.62 Ω at 20 °C (68 °F)



Model	VK10W
T.P.S. (throttle position sensor): Manufacturer Resistance	KEIHIN 4 ~ 6 kΩ at 20 °C (68 °F) (Blue – Black) 0 ~ 4 kΩ at 20 °C (68 °F) (Yellow – Black)
Oil level switch: Model/Manufacturer	8FA/ASTI
Fuel sender: Model/Manufacturer Sender resistance Full Empty	8FN/NIPPON SEIKI 10 ~ 12 Ω at 20 °C (68 °F) 179 ~ 185 Ω at 20 °C (68 °F)
Starting circuit cut-off relay, passenger grip warmer relay, radiator fan motor relay: Model/Manufacturer Coil resistance	8DM/MATSUSHITA 75.7 ~ 92.5 Ω at 20 °C (68 °F)
Headlight relay, gear position switch relay: Model/Manufacturer Coil resistance	5DM/OMRON 94.5 ~ 115.5 Ω at 20 °C (68 °F)
Grip warmer: Heater resistance (left) (right)	1.53 ~ 1.87 Ω at 20 °C (68 °F) 1.53 ~ 1.87 Ω at 20 °C (68 °F)
Thumb warmer: Heater resistance	37.0 ~ 45.2 Ω at 20 °C (68 °F)
Passenger grip warmer: Heater resistance (high) Heater resistance (low)	8.82 ~ 10.78 Ω (Green – Black) 14.67 ~ 17.93 Ω (Yellow – Black)
Circuit breaker: Type Amperage for individual circuit Main fuse Headlight fuse Signal fuse Ignition fuse Carburetor heater fuse DC terminal fuse Radiator fan fuse Reserve fuse Reserve fuse Reserve fuse Reserve fuse Reserve fuse	Fuse 30 A × 1 20 A × 1 10 A × 1 15 A × 1 20 A × 1 3 A × 1 15 A × 1 30 A × 1 20 A × 1 15 A × 1 10 A × 1 3 A × 1
Coolant temperature sensor: Model/Manufacturer Resistance Indicator light (ON) (OFF)	8CC/MITSUBISHI 5.21 ~ 6.37 kΩ at 0 °C (32 °F) 0.290 ~ 0.354 kΩ at 80 °C (176 °F) 0.170 ~ 0.208 kΩ at 100 °C (212 °F) 95 ~ 116 °C (203 ~ 241 °F) 90 ~ 110 °C (194 ~ 230 °F)
Radiator fan: ON OFF	86 ~ 105 °C (187 ~ 221 °F) 79 ~ 97 °C (174 ~ 207 °F)

MAINTENANCE SPECIFICATIONS

SPEC

Model	VK10W
Speed sensor: Model/Manufacture	8EK/NIPPON SEIKI
Carburetor heater: Model/Manufacture Wattage Resistance	5FU/NIPPON THERMOSTAT 30 W 6 ~ 10 Ω at 20 °C (68 °F)



HIGH ALTITUDE SETTINGS

Temperature Altitude	−30 °C (−22 °F)		−10 °C (−14 °F)		10 °C (50 °F)		Idling speed (r/min)
0 ~ 200 m (0 ~ 700 ft)	MJ PJ	#150 #50	MJ PJ	#148 #48	MJ PJ	#148 #45	1,400
200 ~ 1,500 m (700 ~ 5,000 ft)	MJ PJ	#148 #48	MJ PJ	#148 #45	MJ PJ	#145 #45	1,400
1,500 ~ 3,000 m (5,000 ~ 10,000 ft)	MJ PJ	#148 #45	MJ PJ	#145 #45	MJ PJ	#145 #40	1,400

[Production spec] MJ#1, 2, 3: #148 PJ: #45



TIGHTENING TORQUE

ENGINE

Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Spark plug	13	1.3	9.4	Apply the engine oil.
Cylinder head bolt (M10 × 1.25)	See NOTE.*1			
Cylinder head bolt	12	1.2	8.7	
Camshaft cap and cylinder head	10	1.0	7.2	
Cylinder head cover	12	1.2	8.7	
Camshaft and camshaft sprocket	24	2.4	17	
Timing chain tensioner	10	1.0	7.2	
Timing chain tensioner cap	7	0.7	5.1	
Timing chain guide (exhaust and intake)	10	1.0	7.2	
Cylinder head water jacket	10	1.0	7.2	
Thermostat housing cover	10	1.0	7.2	Apply LOCTITE®
Coolant temperature sensor	23	2.3	17	
Hose band	2	0.2	1.4	
Water pump	12	1.2	8.7	
Coolant reservoir	10	1.0	7.2	
Coolant hose joint	10	1.0	7.2	
Carburetor coolant shut-off assembly	5	0.5	3.6	
Oil cooler	10	1.0	7.2	
Engine mounting adjust bolt	9	0.9	6.5	
Engine mounting nut	65	6.5	47	
Engine mounting bracket	25	2.5	18	Apply LOCTITE®
Oil pan	10	1.0	7.2	
Oil pan drain bolt	10	1.0	7.2	
Oil filter cartridge	17	1.7	12	
Oil pump	12	1.2	8.7	
Oil pump drive chain guide	10	1.0	7.2	
Oil pump housing cover	3	0.3	2.2	
Oil pump driven gear	15	1.5	11	
Oil tank drain bolt	16	1.6	11	
Oil tank and frame (bolt)	10	1.0	7.2	
Oil tank and frame (nut)	19	1.9	14	
Oil gallery bolt	20	2.0	14	
Oil cooler outlet pipe	10	1.0	7.2	
Check valve	10	1.0	7.2	
Exhaust pipe joint	25	2.5	18	
Muffler band	20	2.0	14	
Exhaust pipe	25	2.5	18	
Exhaust pipe joint band	9	0.9	6.5	
Muffler	16	1.6	11	
Muffler cover	11	1.1	8	
Muffler cover plate	11	1.1	8	
Exhaust pipe joint cover	7	0.7	5.1	
Crankcase (M9 × 1.25)	See NOTE.*2			Apply the engine oil.
Crankcase (M8 × 1.25)	24	2.4	17	Apply the engine oil.
Crankcase (M6 × 1.0)	12	1.2	8.7	Apply the engine oil.



Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Primary sheave drive shaft assembly bolt	12	1.2	8.7	Apply LOCTITE® Apply the engine oil.
Connecting rod and cap	See NOTE.*3			
Balancer	35	3.5	25	
Balancer shaft bearing retainer	10	1.0	7.2	
A.C. magneto rotor	130	13	94	
A.C. magneto rotor cover bolt (M6 × 1.0) × 11	12	1.2	8.7	
A.C. magneto rotor cover bolt (M6 × 1.0) × 1	12	1.2	8.7	
Starter clutch	12	1.2	8.7	
Stator coil	10	1.0	7.2	
Pickup coil	6	0.6	4.3	
A.C. magneto lead holder	10	1.0	7.2	
Carburetor joint	10	1.0	7.2	
Air filter case joint clamp screw	3	0.3	2.2	
Starter motor	27	2.7	20	
Fuel pump	10	1.0	7.2	
Fuel pump stay	10	1.0	7.2	
Fuel tank	10	1.0	7.2	
Starter motor lead	7	0.7	5.1	
Throttle cable locknut	6	0.6	4.3	
Rectifier/regulator	7	0.7	5.1	
Ground earth lead (engine mounting bracket)	25	2.5	18	
Ground earth lead (Ignitor unit)	7	0.7	5.1	
Frame cross member (front)	23	2.3	17	
Frame cross member (side [front])	45	4.5	32	
Frame cross member (side [rear])	23	2.3	17	
Frame cross member (under side [rear])	20	2.0	14	

NOTE:

- *1: Tighten the cylinder head bolts to 25 Nm (2.5 m · kg, 18 ft · lb) in the proper tightening sequence, loosen and retighten the cylinder head bolts to 25 Nm (2.5 m · kg, 18 ft · lb) in the proper tightening sequence, and then tighten the cylinder head bolts further to reach the specified angle 180° in the proper tightening sequence.
- *2: Tighten the crankcase bolts to 15 Nm (1.5 m · kg, 11 ft · lb) in the proper tightening sequence, loosen and retighten the crankcase bolts to 15 Nm (1.5 m · kg, 11 ft · lb) in the proper tightening sequence, and then tighten the crankcase bolts further to reach the specified angle 65 ~ 70° in the proper tightening sequence.
- *3: Tighten the connecting rod nuts to 20 Nm (2.0 m · kg, 14 ft · lb), and then tighten the connecting rod nuts further to reach the specified angle 120°.



POWER TRAIN

Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Primary sheave	See NOTE.			Left-hand thread. Apply LOCTITE®
Spider and sliding sheave	200	20	145	
Primary sheave cap and sliding sheave	14	1.4	10	Apply LOCTITE®
Roller and weight (primary sheave)	6	0.6	4.3	
Set bolt (primary sheave collar)	4	0.4	2.9	Apply LOCTITE®
Secondary sheave	64	6.4	46	
Stopper (secondary sheave)	7	0.7	5.1	Apply LOCTITE®
Spring seat (secondary sheave)	23	2.3	17	
Secondary sheave adjusting bolt	10	1.0	7.2	Apply LOCTITE®
Secondary shaft bolt	30	3.0	22	
Drive chain adjusting locknut	25	2.5	18	Apply LOCTITE®
Drive chain housing and frame	43	4.3	31	
Drive chain housing cover, chain housing and frame	43	4.3	31	Apply LOCTITE®
Shift cam bolt	18	1.8	13	
Gear position switch	20	2.0	14	Apply LOCTITE®
Drive chain housing oil drain bolt	16	1.6	12	
Drive chain housing cover (M8)	24	2.4	17	Apply LOCTITE®
Drive chain housing cover (M6)	10	1.0	7.2	
Set bolt (secondary shaft)	6	0.6	4.3	Apply LOCTITE®
Shift lever assembly	23	2.3	17	
Shift lever stay and shift lever stopper	23	2.3	17	Apply LOCTITE®
Shift lever stay and shift lever guide	59	5.9	43	
Shift lever assembly and lever rod	10	1.0	7.2	Apply LOCTITE®
Lever and drive chain housing	14	1.4	10	
Low wheel gear shaft	10	1.0	7.2	Apply LOCTITE®
Low pinion gear	10	1.0	7.2	
Reverse drive gear shaft	10	1.0	7.2	Apply LOCTITE®
Driven gear	55	5.5	40	
Counter gear	10	1.0	7.2	Apply LOCTITE®
Driven sprocket and low drive gear	18	1.8	13	
Drive chain housing and brake caliper	48	4.8	35	Apply LOCTITE®
Brake caliper bleed screw	6	0.6	4.3	
Brake caliper retaining pin	18	1.8	13	Apply LOCTITE®
Brake hose union bolt (caliper side)	30	3.0	22	
Parking brake assembly and drive chain housing	10	1.0	7.2	Apply LOCTITE®
Lever and parking brake assembly	16	1.6	11	
Brake hose union bolt (brake master cylinder side)	30	3.0	22	Apply LOCTITE®
Parking brake cable and parking brake lever	10	1.0	7.2	
Parking brake cable locknut	6	0.6	4.3	Apply LOCTITE®
Brake master cylinder	10	1.0	7.2	
Brake master cylinder holder and parking brake lever	23	2.3	17	Apply LOCTITE®
Slide rail suspension mounting bolt (M10)	72	7.2	52	
Stopper band	4	0.4	2.9	Apply LOCTITE®
Hook and front pivot arm	16	1.6	11	
Front suspension bracket and sliding frame	72	7.2	52	Apply LOCTITE®
Bracket bolt (rear)	30	3.0	22	

TIGHTENING TORQUE

SPEC



Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Shaft and sliding frame	72	7.2	52	Apply LOCTITE®
Shock absorber and front pivot arm	49	4.9	35	
Shock absorber and front suspension bracket	49	4.9	35	
Front pivot arm and sliding frame	72	7.2	52	Apply LOCTITE®
Suspension wheel (front, center and rear)	72	7.2	52	Apply LOCTITE®
Wheel bracket and sliding frame	24	2.4	17	
Shock absorber and rear suspension bracket	49	4.9	35	
Rear pivot arm and pull rod	49	4.9	35	Apply LOCTITE®
Rear suspension bracket and pull rod	49	4.9	35	Apply LOCTITE®
Shock absorber and rear pivot arm	49	4.9	35	
Rear pivot arm and rear pivot arm bracket	24	2.4	17	
Control rod and sliding frame	72	7.2	52	Apply LOCTITE®
Control rod bolt	32	3.2	23	
Rear pivot arm bracket	72	7.2	52	Apply LOCTITE®
Wheel bracket shaft and sliding frame	80	8.0	58	
Pivot bracket and sliding bracket	69	6.9	50	
Pivot bracket and rear sliding frame	34	3.4	24	
Pivot bracket and spring hook	28	2.8	20	Apply grease*
Rear axle	80	8.0	58	
Set bolt (front axle)	9	0.9	6.5	Apply LOCTITE®
Speed sensor	20	2.0	14	
Bearing holder	20	2.0	14	
Gear unit (speed sensor)	40	4.0	29	

*: ESSO beacon 325 grease or Aeroshell grease #7A

NOTE:

Tightening steps:

1. Tighten the bolt to a torque at 120 Nm (12.0 m · kg, 85 ft · lb).
2. Loosen the bolt completely.
3. Retighten the bolt to a torque of 60 Nm (6.0 m · kg, 43 ft · lb).



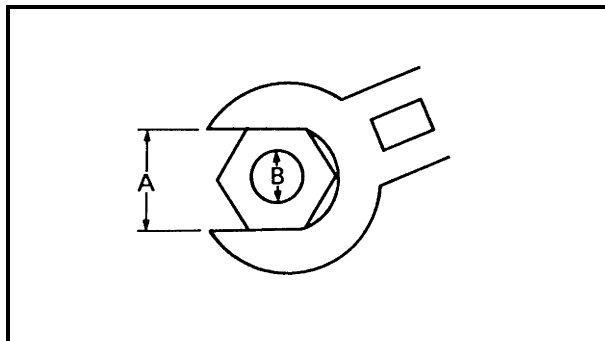
CHASSIS

Parts to be tightened	Tightening torque			Remarks
	Nm	m · kg	ft · lb	
Handlebar holder	15	1.5	11	Apply LOCTITE®
Steering column 1 (front)	23	2.3	17	
Steering column 1 (rear upper)	23	2.3	17	
Steering column 1 (rear lower)	35	3.5	25	
Steering column 2 (upper)	23	2.3	17	
Steering column 2 (lower)	23	2.3	17	
Steering column 2 and steering shaft	35	3.5	25	
Steering shaft end locknut	25	2.5	18	
Steering shaft and steering column 1	35	3.5	25	
Steering column 1 and relay rod	35	3.5	25	
Relay rod and idler arm	30	3.0	22	
Relay arm and idler arm	35	3.5	25	
Idler arm and tie rod	30	3.0	22	
Tie rod and steering arm	35	3.5	25	
Relay arm	53	5.3	38	
Tie rod end locknut	25	2.5	18	Apply LOCTITE®
Ski	48	4.8	35	
Ski runner	19	1.9	14	
Ski and ski handle (M8 × 55)	11	1.1	8	
Ski and ski handle (M8 × 100)	17	1.7	12	
Shock absorber (upper)	45	4.5	33	
Shock absorber (lower)	45	4.5	33	
Steering arm and ski column	35	3.5	25	
Upper arm and frame	37	3.7	27	
Upper arm and steering knuckle	40	4.0	29	
Lower arm and frame	37	3.7	27	
Lower arm and steering knuckle	65	6.5	47	
Front bumper	27	2.7	19	
Rider seat	10	1.0	7.2	
Rear carrier and frame	48	4.8	35	
Rear carrier and tail/brake light bracket	23	2.3	17	
Tail/brake light bracket and frame (front)	18	1.8	13	
Tail/brake light bracket and frame (rear)	30	3.0	22	
Rear carrier seat	7	0.7	5.1	
Tail brake light cover	7	0.7	5.1	
Passenger assist grip	48	4.8	35	
Passenger assist grip bracket	21	2.1	15	
Tail/brake light assembly	7	0.7	5.1	
Battery bracket	18	1.8	13	
Main switch	2	0.2	1.4	
Shroud	13	1.3	9.4	

GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (nut)	B (bolt)	General torque specifications		
		Nm	m · kg	ft · lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94

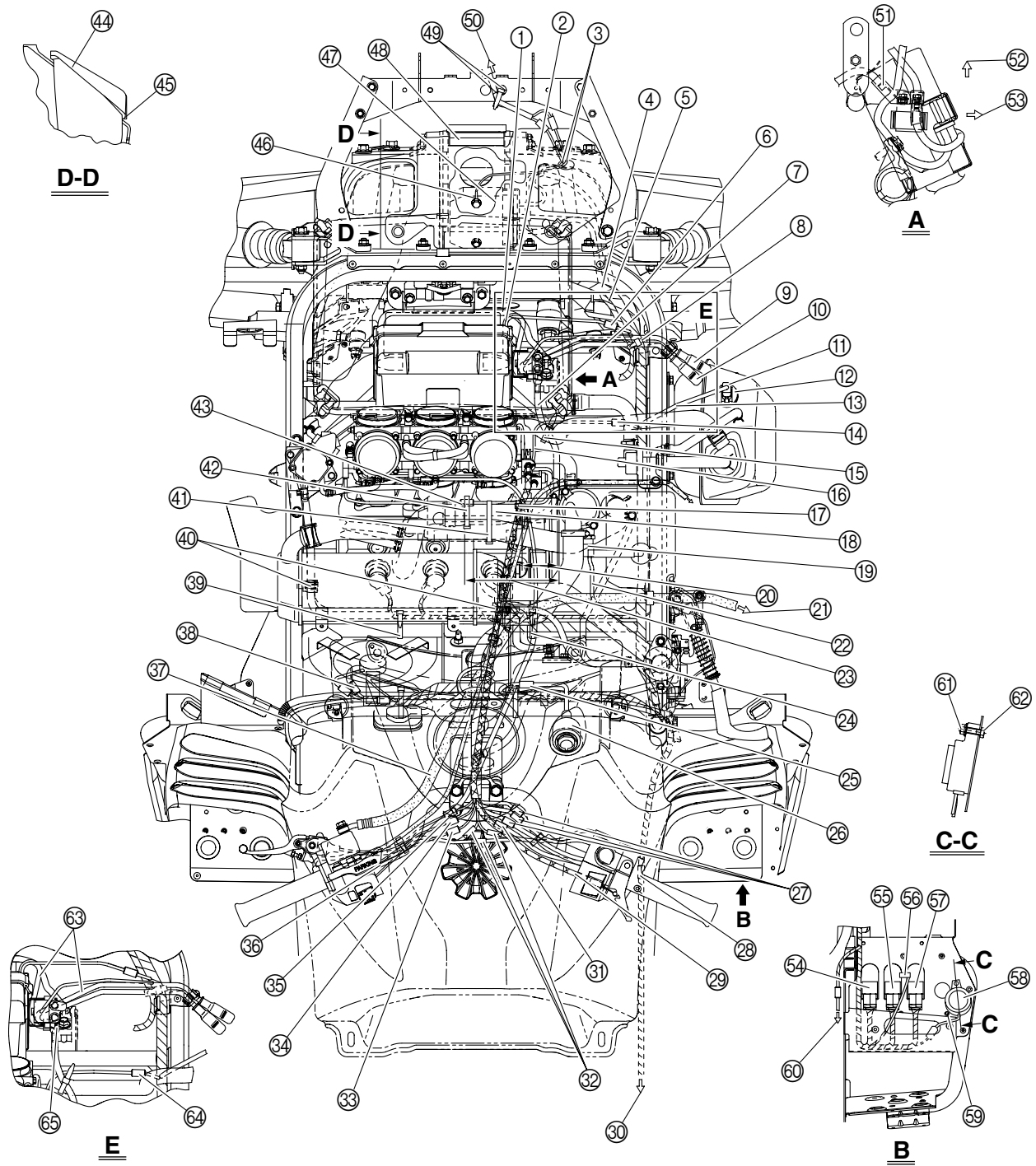


A: Distance across flats

B: Outside thread diameter

DEFINITION OF UNITS

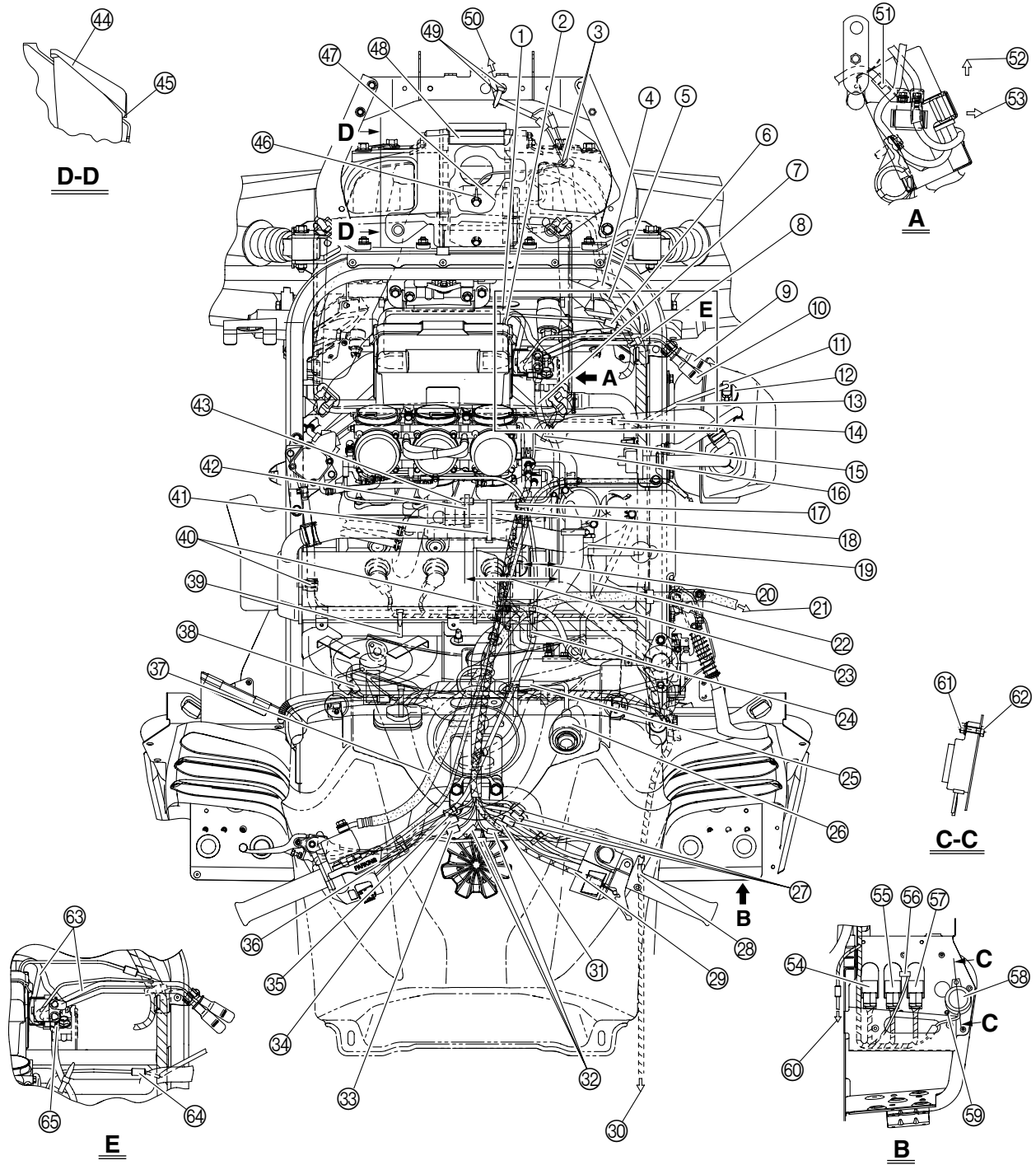
Unit	Read	Definition	Measurement
mm	Millimeter	10^{-3} meter	Length
cm	Centimeter	10^{-2} meter	Length
kg	Kilogram	10^3 gram	Weight
N	Newton	$1 \text{ kg} \times \text{m/sec}^2$	Force
Nm	Newton meter	$\text{N} \times \text{m}$	Torque
m · kg	Meter kilogram	$\text{m} \times \text{kg}$	Torque
Pa	Pascal	N/m^2	Pressure
N/mm	Newtons per millimeter	N/mm	Spring rate
L	Liter	—	Volume or capacity
cm^3	Cubic centimeter	—	Volume or capacity
r/min	Rotations per minute	—	Engine speed





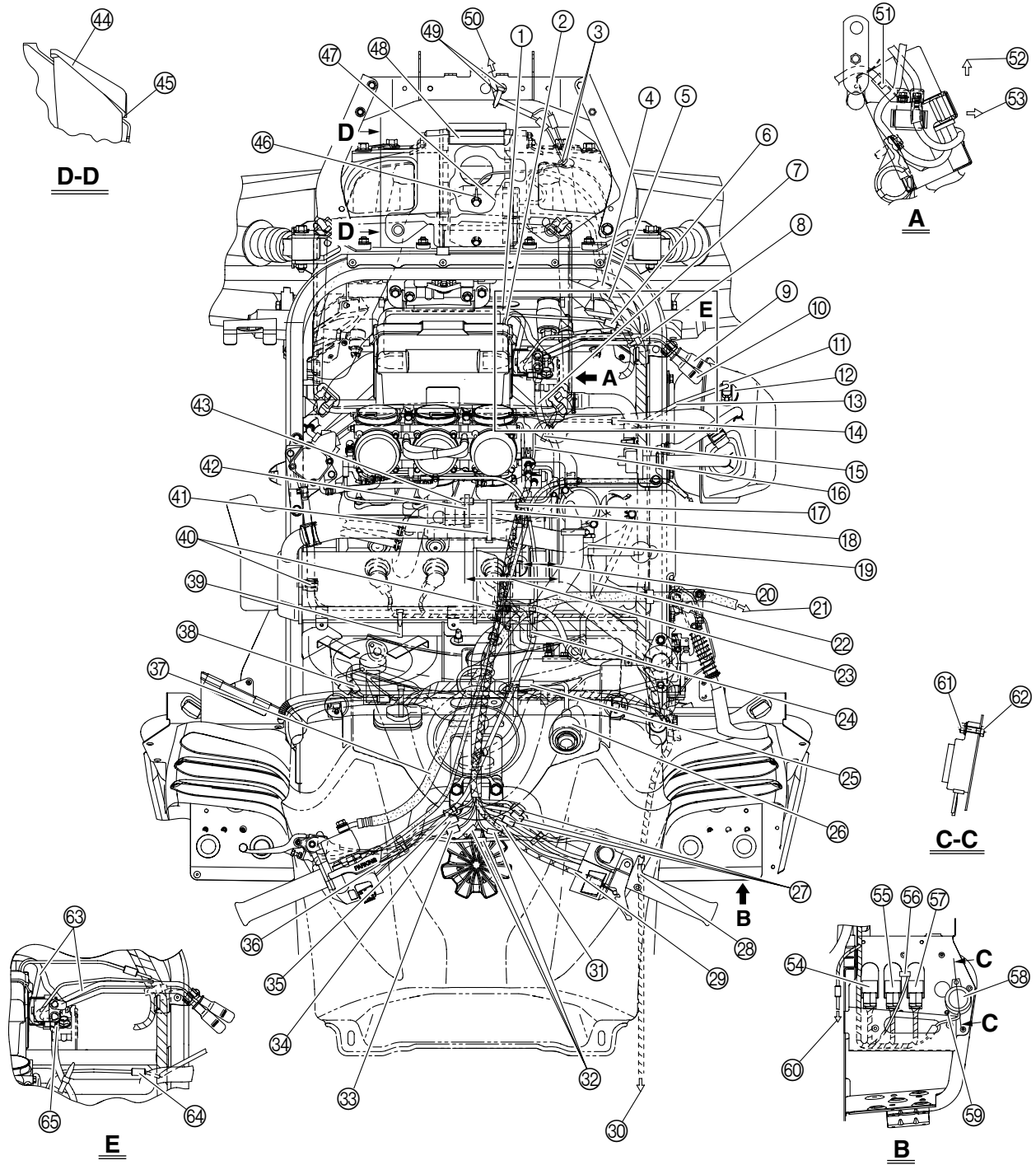
CABLE ROUTING

- ① Positive battery lead
- ② Negative battery lead
- ③ Pass the wire harness (two leads) through the hole in the cover.
- ④ Wire harness
- ⑤ A.C. magneto lead
- ⑥ Negative battery lead coupler
- ⑦ Positive starter motor lead
- ⑧ Fasten the A.C. magneto lead and wire harness with the plastic band.
- ⑨ Negative battery lead terminal
- ⑩ Positive battery lead terminal
- ⑪ Oil level switch lead coupler
- ⑫ Oil level gauge/dipstick
- ⑬ Route the oil level switch lead behind the battery bracket.
- ⑭ Carburetor heater coupler
- ⑮ Fasten the positive starter motor lead and oil tank inlet hose with the plastic band. Face the end of the plastic band towards the battery bracket.
- ⑯ Pass the carburetor heater lead over the oil cooler outlet hose.
- ⑰ Fasten the wire harness and coolant hose with the plastic band, making sure that the wire harness is not routed under the hose.
- ⑱ Starter motor
- ⑲ Coolant temperature sensor coupler
- ⑳ 45 ± 5 mm (1.77 ± 0.20 in)
- ㉑ To the brake caliper
- ㉒ Pass the coolant temperature sensor lead over the coolant hose.
- ㉓ Less than 145 mm (5.71 in)
- ㉔ Fasten the ignition coil lead and wire harness to the frame cross member with the plastic band, making sure to face the end of the band rearward.
- ㉕ Place the main switch lead coupler underneath the fuel tank cover.
- ㉖ Main switch
- ㉗ Handlebar switch lead couplers
- ㉘ Tail/brake light sub-wire harness coupler
- ㉙ Throttle cable
- ㉚ To the tail/brake light
- ㉛ Thumb warmer switch lead couplers
- ㉜ Grip warmer connectors
- ㉝ Headlight beam switch coupler
- ㉞ Grip warmer adjustment switch lead coupler
- ㉟ Brake light switch coupler



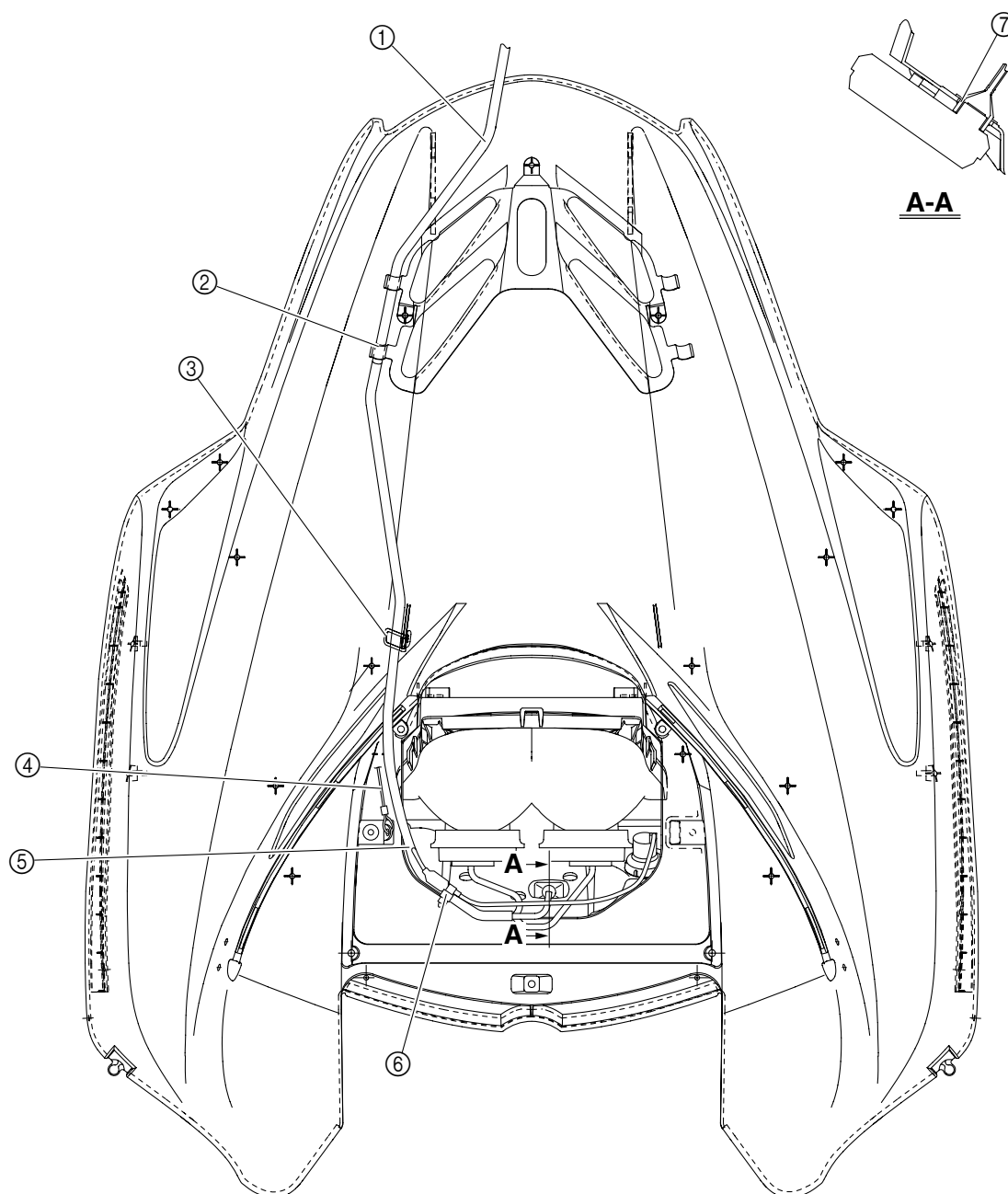


- ③⑥ Starter cable
- ③⑦ Brake hose
- ③⑧ Fuel sender lead coupler
- ③⑨ Fasten the ignition coil lead to the frame cross member with the plastic band, making sure to fasten the lead under the fuel hoses and to face the end of the band rearward.
- ④⑩ Fasten the fuel hoses with the holders.
- ④⑪ Fasten the coolant hoses with plastic band, making sure that the end of the band is to the rear of the hose, facing downward.
- ④⑫ Fasten the coolant hose and throttle position sensor coupler with the plastic band, making sure that the end of the band is to the rear of the hose, facing downward.
- ④⑬ Slide the boot completely over the throttle position sensor coupler, and then fasten the coupler to the coolant hose with the plastic band.
- ④⑭ Air duct
- ④⑮ When installing the air duct, make sure that it contacts the bulkhead.
- ④⑯ Install the ground lead terminal and the rectifier/regulator using the same bolt.
- ④⑰ Rectifier/regulator
- ④⑱ Insert the front section of the cover into the frame.
- ④⑲ Fasten the wire harness at the white tape with the plastic band.
- ⑤⑩ To the headlight and meter assembly
- ⑤⑪ Install the starter motor lead terminal so that the bent section of the terminal is facing upward.
- ⑤⑫ Up
- ⑤⑬ Front
- ⑤⑭ Load control relay
- ⑤⑮ Headlight relay
- ⑤⑯ Fasten the gear position switch lead at the positioning tape with the plastic locking tie.
- ⑤⑰ Carburetor heater relay
- ⑤⑱ Back buzzer
- ⑤⑲ When installing the back buzzer, make sure that it contacts the rivet.
- ⑥⑩ To the tail/brake light
- ⑥⑪ Nut
- ⑥⑫ Bolt
- ⑥⑬ Pass the negative battery leads under the starter relay.



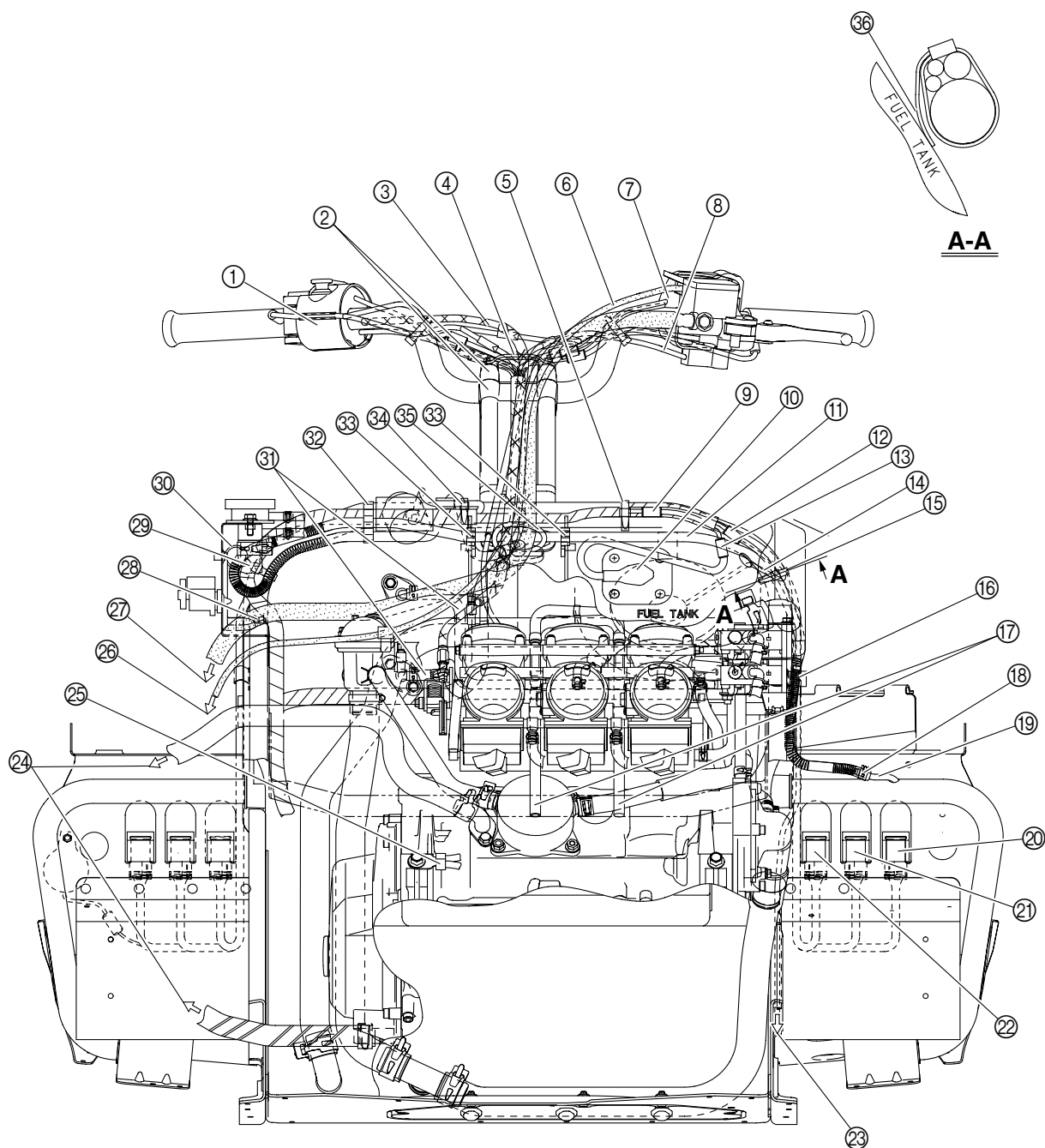


- ⑥4 Pass the carburetor heater lead under the positive starter motor lead.
- ⑥5 Be sure to install the positive battery lead terminal so that it is facing rearward.



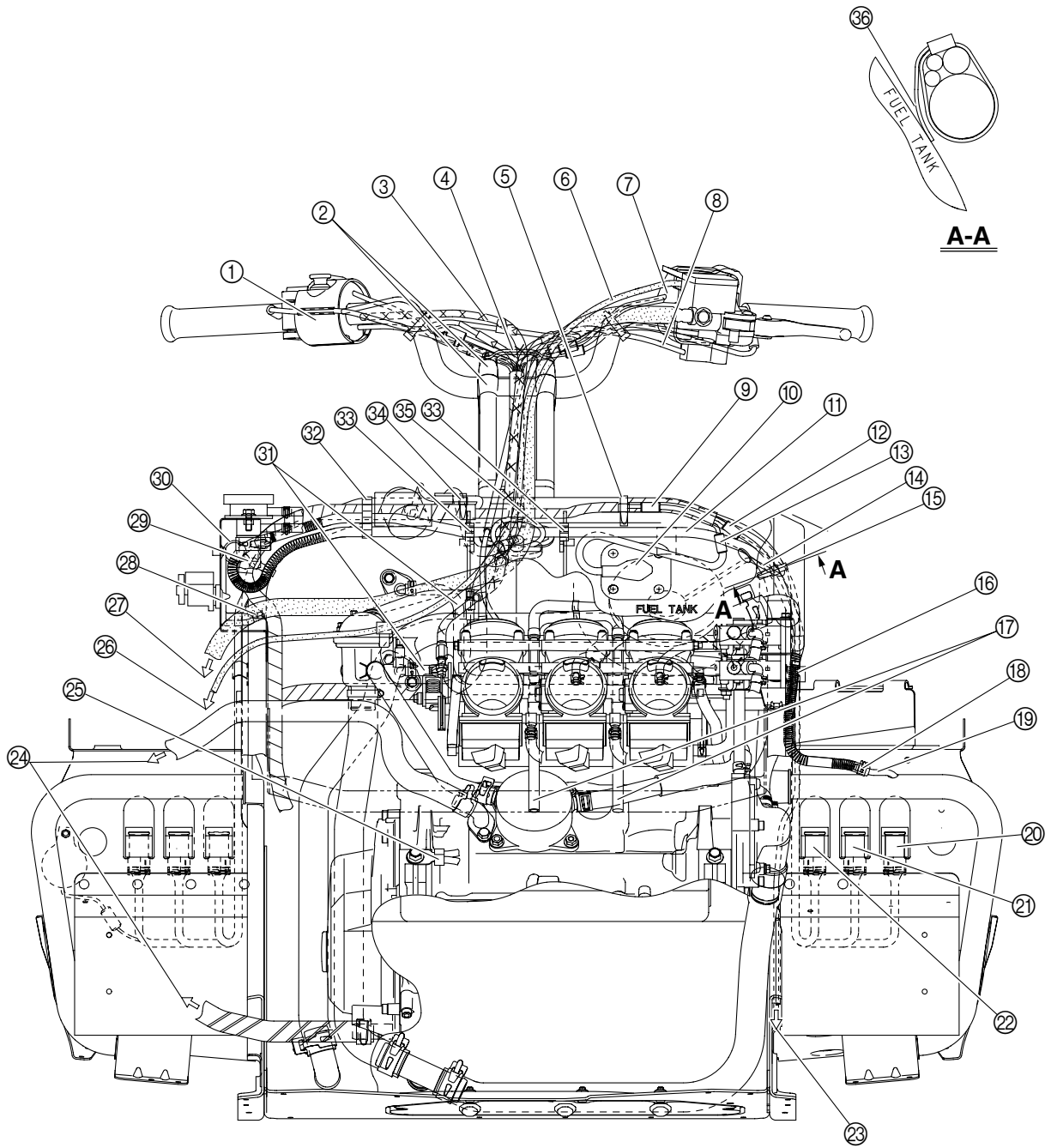


- ① Headlight sub-wire harness
- ② Fasten the headlight sub-wire harness at the white tape with the holder on the shroud.
- ③ Fasten the headlight sub-wire harness with the holder.
- ④ Shroud stopper
- ⑤ Pass the headlight sub-wire harness inside of the shroud stopper.
- ⑥ Fasten the headlight sub-wire harness and lead at the tape with the plastic band. After connecting the coupler, install the rubber cover securely.
- ⑦ Install the meter assembly coupler rubber cover until it contacts the meter assembly.



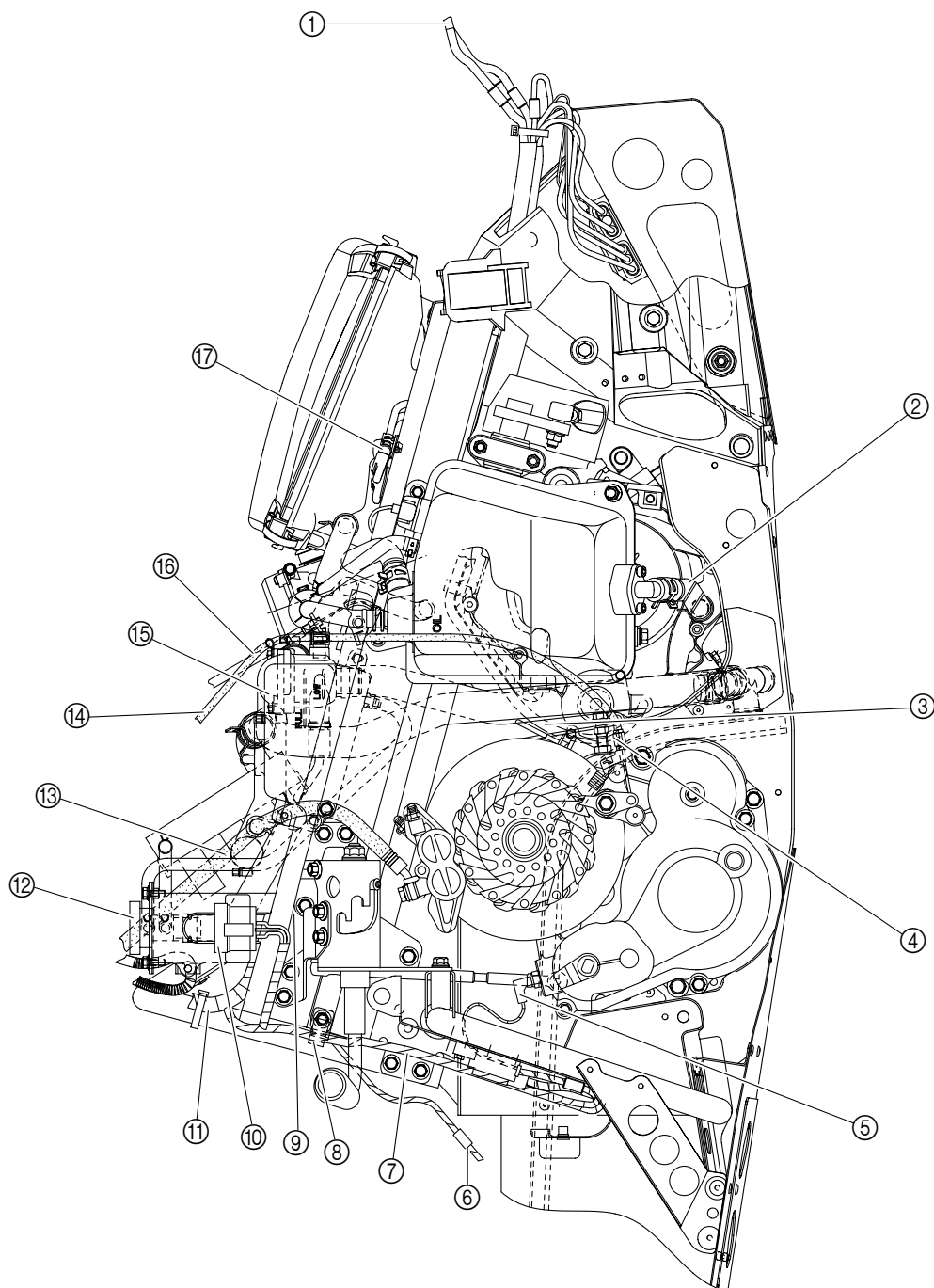


- ① Right handlebar switch
- ② Handlebar holder
- ③ Throttle cable
- ④ Pass all of the leads and cables through the guide, except the parking brake cable. Do not pass the brake hose through the guide.
- ⑤ Fasten the wire harness with the plastic band.
- ⑥ Parking brake cable
- ⑦ Left handlebar switch
- ⑧ Starter cable. Pass the starter cable over the left handle leads.
- ⑨ Speed sensor coupler
- ⑩ Lead cover
- ⑪ Route the fuel tank breather hose along the frame cross member.
- ⑫ Radiator fan motor coupler
- ⑬ Fuel sender coupler
- ⑭ There should be no slack in the radiator fan motor lead.
- ⑮ Fasten the relay lead, speed sensor lead, and radiator fan motor lead with the plastic band.
- ⑯ Fasten the compression spring section of the fuel tank breather hose with the holder.
- ⑰ Route the float chamber air vent hoses behind the battery bracket.
- ⑱ Face the ends of the clamp upward.
- ⑲ Install the fuel tank breather hose onto the breather pipe, making sure that it contacts the running board support.
- ⑳ Back buzzer relay
- ㉑ Passenger grip warmer relay
- ㉒ Radiator fan motor relay
- ㉓ To the speed sensor
- ㉔ To the oil tank
- ㉕ Negative battery lead
- ㉖ To the parking brake
- ㉗ To the brake caliper
- ㉘ Brake hose
- ㉙ Fasten the wire harness with the plastic band.
- ㉚ Fasten the coolant hose with the clamp.
- ㉛ Fuel hoses
- ㉜ Fasten the wire harness and the fuel tank breather hose next to the rubber damper on the frame cross member with the holder, making sure that the ends of the holder are facing up.
- ㉝ Fasten the fuel tank breather hose with the holder.
- ㉞ Fasten the wire harness with the plastic band.



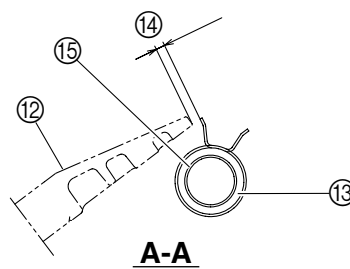
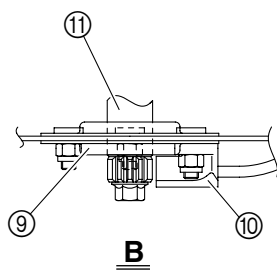
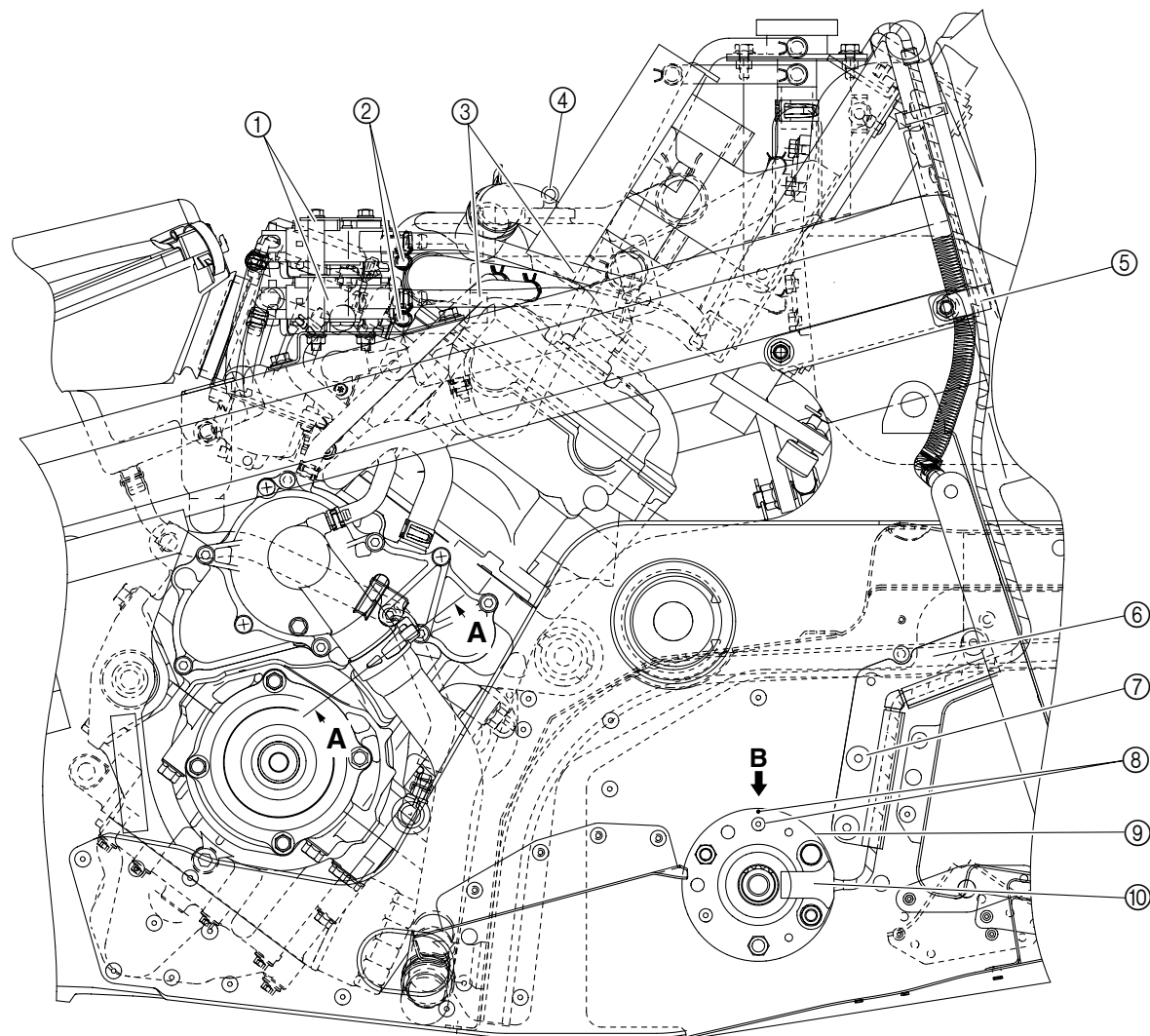


- ③⑤ Pass the wire harness, brake hose, and parking brake cable through the guide. Do not pass the throttle cable and starter cable through the guide.
- ③⑥ Place the end of the plastic band between the frame cross member and the fuel tank.



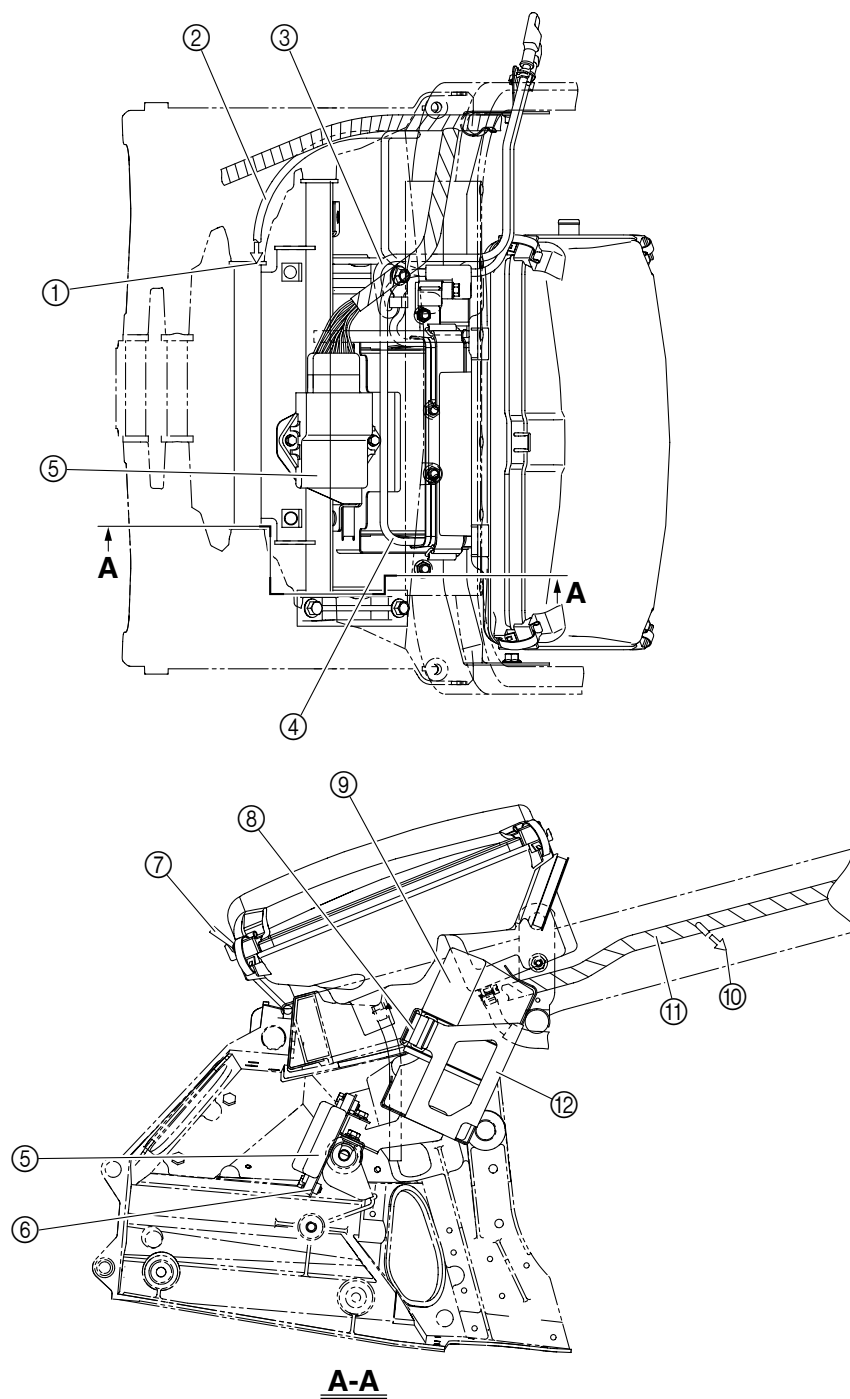


- ① Headlight sub-wire harness
- ② Oil tank outlet hose
- ③ Starter motor positive lead
- ④ Pass the starter motor positive lead behind the engine.
- ⑤ Gear position switch lead
- ⑥ To the tail/brake light
- ⑦ Route the wire harness to the front of the frame cross member bolts, making sure that the harness is not on the bolts.
- ⑧ Fasten the wire harness with the holder. Secure the frame cross member and the holder to the frame with the nut and bolt.
- ⑨ Gear position switch lead
- ⑩ Fuse box
- ⑪ Wire harness
- ⑫ Conduction assembly
- ⑬ Brake hose
- ⑭ Parking brake cable
- ⑮ Coolant reservoir
- ⑯ Route the parking brake cable so that it is not caught on the check valve hose clamp.
- ⑰ Fasten the positive battery lead terminal and negative battery lead terminal with the holder.



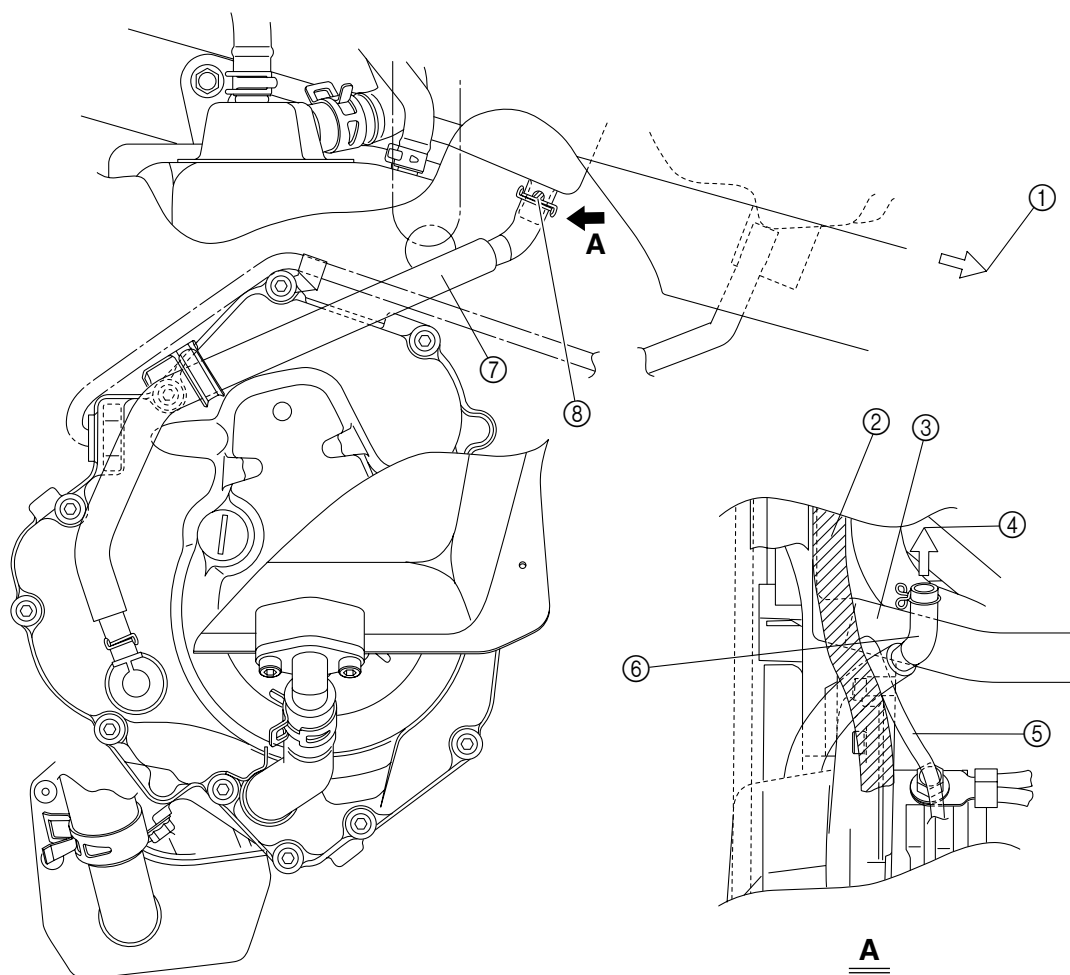


- ① Fuel pumps
- ② Face the ends of each clamp outward.
- ③ Fuel hoses
- ④ Coolant reservoir
- ⑤ Fasten the fuel tank breather hose, speed sensor lead and relay leads with the holder.
Secure the frame cross member and the holder to the frame with the nut and bolt.
- ⑥ Speed sensor lead holder
- ⑦ Rivet (quantity: 4)
- ⑧ Align the punch mark on the bearing holder with the rivet.
- ⑨ Bearing holder
- ⑩ Speed sensor
- ⑪ Front axle
- ⑫ Primary sheave
- ⑬ Water pump inlet hose
- ⑭ More than 5 mm (0.2 in)
- ⑮ Water pump



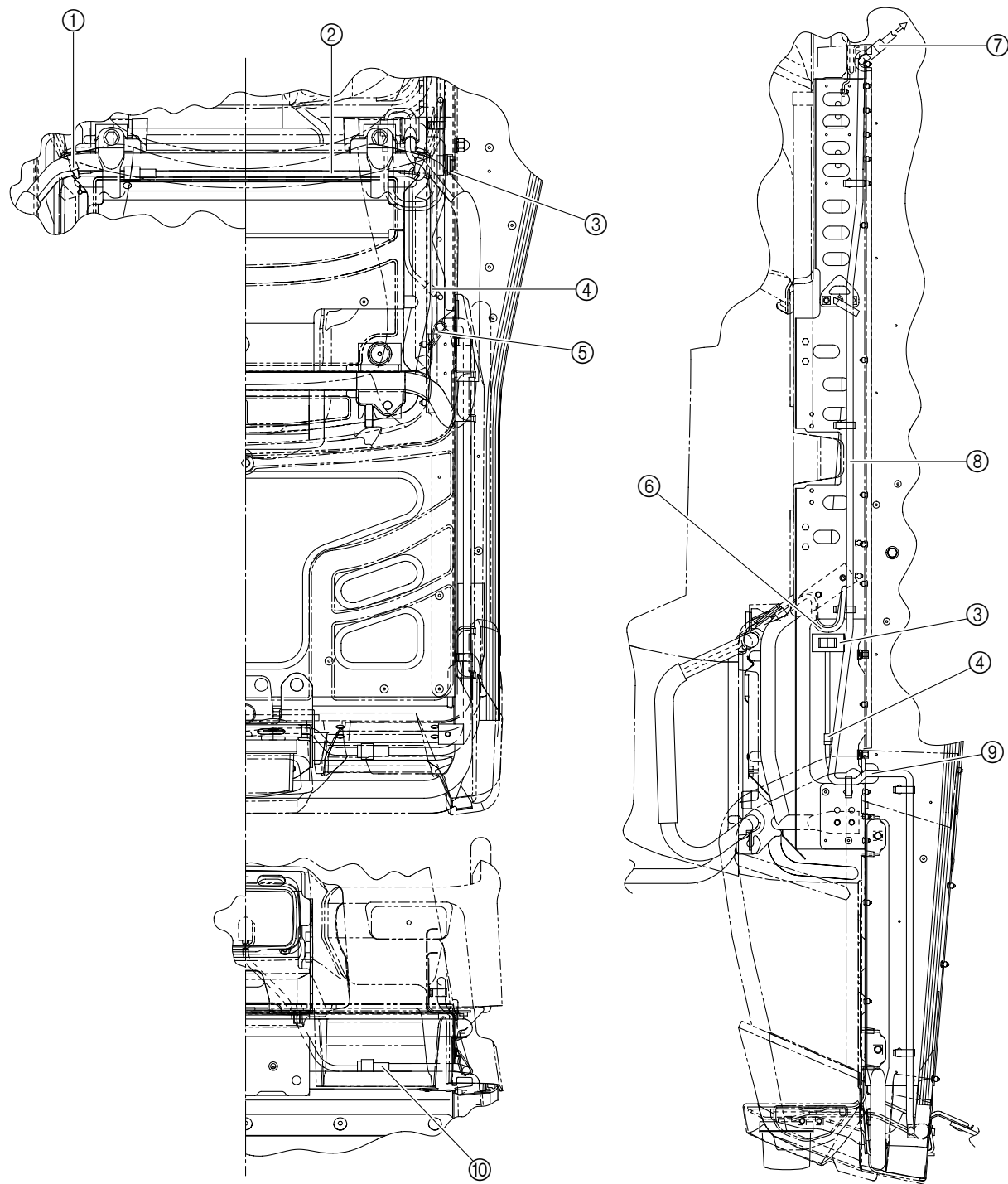


- ① To the starter motor
- ② Starter motor positive lead
- ③ Negative battery lead
- ④ Positive battery lead
- ⑤ Ignitor unit
- ⑥ Ignitor unit bracket
- ⑦ Air filter case latch
- ⑧ Battery band
- ⑨ Battery cover
- ⑩ To the carburetor
- ⑪ Wire harness
- ⑫ Battery bracket





- ① Forward
- ② Wire harness
- ③ Battery bracket
- ④ To the air filter case
- ⑤ A.C. magneto lead
- ⑥ Route the crankcase breather hose inside of the wire harness, and then over the starter motor positive lead, and under the battery bracket.
- ⑦ Crankcase breather hose
- ⑧ Face the paint mark towards vehicle outside.





- ① Fasten the passenger grip warmer lead with the plastic band, making sure that the end of the band is on top of the pipe and facing rearward. The plastic band should not be visible when the passenger seat is installed.
- ② Route the passenger grip warmer lead along the groove in the storage compartment. Route the passenger grip warmer lead along the groove in the storage compartment, making sure that there is not excessive slack in the lead.
- ③ Be sure to install the passenger grip warmer switch with the "HI" side up.
- ④ Position the coupler on the inside of the storage compartment.
- ⑤ Fasten the tail/brake light sub-wire harness with the plastic band. (quantity: 7)
- ⑥ Pass the passenger grip warmer lead through the hole in the frame, routing it towards the inside of the snowmobile, and then pass the lead through the hole in the storage compartment before connecting it.
- ⑦ Connect the tail/brake light sub-wire harness coupler on the outside of the storage compartment.
- ⑧ Tail/brake light sub-wire harness
- ⑨ Route the handlebar switch lead on top of the sponge cushion that is affixed to the frame.
- ⑩ Position the tail/brake light sub-wire harness coupler in the location shown in the illustration.

WIRING DIAGRAM

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- ① Pickup coil
- ② A.C. magneto
- ③ Rectifier/regulator
- ④ Main switch
- ⑤ Load control relay
- ⑥ Main fuse
- ⑦ Starter relay
- ⑧ Starter motor
- ⑨ Battery
- ⑩ Engine stop switch
- ⑪ Throttle switch
- ⑫ Carburetor heater relay
- ⑬ Carburetor ground
- ⑭ Carburetor heater
- ⑮ Radiator fan motor relay
- ⑯ Radiator fan motor
- ⑰ Grip warmer
- ⑱ Thumb warmer
- ⑲ Ignitor unit
- ⑳ Ignition coil
- ㉑ Spark plug
- ㉒ Throttle position sensor
- ㉓ Coolant temperature sensor
- ㉔ Grip warmer adjustment switch
- ㉕ Thumb warmer adjustment switch
- ㉖ Frame ground
- ㉗ Passenger grip warmer relay
- ㉘ Passenger grip warmer switch
- ㉙ Passenger grip warmer
- ㉚ DC back buzzer
- ㉛ Gear position switch relay
- ㉜ Gear position switch
- ㉝ Brake light switch
- ㉞ Tail/brake light
- ㉟ Speed sensor
- ㊱ Fuel sender
- ㊲ Oil level switch
- ㊳ Meter assembly
- ㊴ Multi-function meter
- ㊵ Warning light
- ㊶ Low coolant temperature indicator light
- ㊷ Meter light
- ㊸ High beam indicator light
- ㊹ Auxiliary DC jack fuse
- ㊺ Headlight fuse
- ㊻ Signal fuse
- ㊼ Cooling fan motor fuse
- ㊽ Carburetor heater fuse
- ㊾ Ignition fuse
- ㊿ Auxiliary DC jack
- ① Headlight beam switch
- ② Headlight relay
- ③ Headlight

COLOR CODE

B	Black
Br	Brown
Dg	Dark green
G	Green
Gy	Gray
L	Blue
Lg	Light green
O	Orange
P	Pink
R	Red
W	White
Y	Yellow
B/L	Black/Blue
B/G	Black/Green
B/W	Black/White
B/Y	Black/Yellow
Br/B	Brown/Black
Br/G	Brown/Green
Br/L	Brown/Blue
Br/R	Brown/Red
Br/W	Brown/White
Br/Y	Brown/Yellow
G/B	Green/Black
G/R	Green/Red
G/W	Green/White
G/Y	Green/Yellow
L/G	Blue/Green
L/R	Blue/Red
L/Y	Blue/Yellow
Lg/L	Light green/Blue
Lg/W	Light green/White
O/B	Orange/Black
O/R	Orange/Red
R/B	Red/Black
R/L	Red/Blue
R/W	Red/White
R/Y	Red/Yellow
W/B	White/Black
W/G	White/Green
W/R	White/Red
W/Y	White/Yellow
Y/B	Yellow/Black
Y/L	Yellow/Blue
Y/R	Yellow/Red



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WIRING DIAGRAM

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